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McVey's Quiz Compends, No. 1.

QUIZ QUESTIONS

ON THE

HISTORY OF MEDICINE.

FROM THE

LECTURES

OF

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QUIZ QUESTIONS

ON THE

HISTORY OF MEDICINE.

1. Who was the first doctor ?

Adam was the first doctor; when ill he employed such methods as his reason or instinct suggested.

2. What connection did Tubal Cain have with surgery ?

He invented cauterizing instruments, machines for reducing fractures, and surgical appliances.

3. Give some account of the state of medicine in ancient Egypt?

The ancient Egyptians hold the honor of being the first people to cultivate medicine as a science. They were a cultured people, having founded and advanced many of the sciences. Among others the art of embalming was excelled in. They were somewhat acquainted with the anatomy of the human body, and medicine was practiced by them as a science. Medicine was closely associated with the mythology of Egypt, the gods of health being Osiris, Isis, and Thoth. Thoth was called by the Greeks Hermes, and by the Latins, Mercury.

The Egyptians looked upon Thoth as the inventor of writing and all the sciences. Imhotpu was another divinity who presided over the cure of disease, and he was called the Aesculapius of the Egyptians. All disease

was supposed to originate from the anger of Isis. In the evening a composition formed of 16 drugs was burned, and the sick were made to sleep in the temple in order that the oracle might reveal to them during sleep the means which ought to be followed for their cure. Among the Egyptians medicine was divided into the science of higher degree (conjurations, dissolving the charms of the gods by prayer, interpretations of the revelations received by the sick during their sojourn in the temples), and the ordinary medical practice.

The highest class of priests, whose duty it was to study the 36 Hermetic books, were physicians of the higher science. The ordinary practitioners were from a lower grade of priests called Pastophori.

It was the duty of the Pastophori to study the last 6 books of the Hermetic collection, or those devoted to medicine. Then there was the military doctor, who like the other doctors practiced specialities. The sick were visited and treated at their homes by the physicians. The patient first sent to the president of the temple, who in turn sent to the patient the specialist best fitted to the case. Each physician was bound to strictly follow the teachings laid down in the 6 Hermetic books, written by the sacred Thoth. They must not deviate in the slightest from these rules: if the doctor followed the laws found in the sacred books and the patient died, he was blameless; but if he departed from these sacred canons in the slightest degree, he was punished with death. Diodorus gives us a reason for this compulsory adherence to the old way of doing; he says that a practice confirmed by long experience and supported by the authority of the greatest masters of the art, was preferable to the limited experience of any one physician. It is said that their diagnosis was formed from the position of the patient in bed. Only the sons of physicians were permitted to adopt the medical

profession, and he who was born a physician was prohibited by heaven and the law from abandoning the profession. The rules governing their conduct were very strict. The Pastophori were enjoined to the greatest cleanliness, circumcision was practiced, and their rules of life were very severe.

The Egyptians paid strict attention to dietetic rules; they thought that the majority of diseases were caused by indigestion, and excess in eating. They practiced abstinence and used emetics. They had a considerable knowledge of *Materia Medica* and used many drugs in the cure of the sick. They were somewhat skilled in operative surgery. They practiced castration, lithotomy and amputations.

4. Give the Egyptians' method of embalming.

The Paraschite (the lowest of the castes) made an incision in the abdomen with a sharp stone; he then ran away to avoid being stoned by the assistants. The regular embalmers, the colchytes, a distinct guild, now removed the viscera which were preserved in vases.

The cranial cavity was cleared of the brain by means of hooks inserted through the nose; the cavities of the abdomen and skull were filled with spices. Then the Taricheutes laid the corpse in a solution of Carbonate of Soda, where it was left for 70 days. At the end of this period it was washed in Caustic Soda, then coated with gum, and finally wrapped in a cloth of fine linen. The corpse thus prepared was placed by friends in a bivalvular coffin of wood hollowed out to fit the size and form of the body and adorned with hieroglyphics. The mummy was then placed in the catacombs. There were 3 grades of embalming; the best cost about \$1125.00, the next grade \$300.00, the 3rd class were merely salted down roughly.

5. Did the Egyptians believe in charms?

Yes.

6. Were the Egyptian physicians specialists ?

Yes, the practice of medicine was almost entirely done by specialists. Every disease had its own physician.

7. Explain the 6 Hermetic books.

Thoth or Hermes was a priest who lived a little after the time of Moses; he wrote a vast cyclopædia in 42 books, the last 6 books being devoted to treatises on surgery, anatomy, therapeutics, general diseases, ophthalmology, and gynecology.

8. What were the principal diseases of Egypt ?

Ophthalmia, affections of the stomach, abdomen and bladder, intestinal worms, varicose veins, ulcers of the leg, and epilepsy.

9. Explain Dr. George Ebers' papyrus roll.

Dr. George Ebers obtained possession of this Egyptian papyrus roll and he determined its age to be 1552 B. C. The work is complete, and is said to be the oldest medical book in existence. It is a treatise on therapeutics, and gives knowledge of many remedies. From it we learn that the medical art flourished in Egypt and Syria 16 centuries B. C. Many of the diseases and pathological conditions which we now study, were known to them and the treatment is described in this book. In *Materia Medica* many metals and metallic compounds are given, and many animals were given as having medicinal power. A large number of recipes and formulæ are given in the text for compound pharmaceutical preparations.

10. What did the old Egyptians know about surgery ?

They were somewhat skilled in surgery, especially operative surgery. They performed circumcision, castration, lithotomy, and did amputations. Many surgical instruments have been discovered proving them to have been well advanced in this art.

11. Explain why anatomy never advanced among the Egyptians ?

Although the Egyptians were obliged to open the body to embalm it, religious scruples prevented them from cutting open or dissecting in the cause of science the dead body, which was identified with Osiris. Baas says they were somewhat acquainted with anatomy, but to a slight degree. As the process of embalming was not intrusted to the physicians, but to the lowest of all of the 7 Egyptian castes, the physicians had little opportunity for acquiring a knowledge of anatomy.

12. Describe briefly the state of medicine among the Babylonians and Assyrians.

The Babylonian was a farmer and a lover of knowledge; while the Assyrian was either a warrior or a trader and cared nothing for books. The great bulk of the people had recourse to religious charms and ceremonies when they were ill, but the better educated looked to the physician with his medicine for aid. When all else failed incantations were practiced. Baas says that the Assyrians regarded disease as a punishment from the gods. Again Baas says they were very strict in observance of the 7th day, and the sick were not allowed the services of a physician on that day. A favorite method of procedure was to expose the patient in the public street, and the passers by, who had labored under a similar affection, or had witnessed a similar case, advised the person to adopt such means as their judgment and memory suggested. No one was permitted to pass by a sick person without questioning him as to the nature of his suffering.

13. How much record have we of Persian medicine ?

We have little record of Persian medicine, but we know that it was theurgic in character. The Persians were especially noted for their knowledge of poisons. While we have scant information concerning their system of medi-

cine, we have much to prove that their physicians were well paid in the currency of the day, namely large and small draught oxen, cows, horses, and camels. The dog being a sacred animal, was treated when sick like a human being. Baas says the Persians got their physicians from the Greeks and the Egyptians.

14. What relation had Moses to hygienic laws ?

Moses was the first writer of and teacher of hygiene. He promulgated hygienic laws of the greatest importance. He laid down laws for food that is clean and food that is unclean, personal cleanliness, regulations for the relation between man and wife, and enforced circumcision by making it a religious ceremony. He gave the pathology of the white leprosy, of issues, of syphilis, of gonorrhea, and of the plague. He also mentioned certain observances in regard to them. He set apart days for fasting and days for feasting. In order to enforce these rules, he surrounded them with the sanctity of priestly robes.

15. Did Solomon write a medical book ?

Tradition attributes to him a medical work which taught how to cure diseases by natural means. Arabian authorities assert that he left a history of plants and animals, and a number of other works.

16. When Solomon died, into whose hands did the art of medicine fall ?

Into the hands of the prophets.

17. What did Jesus the son of Sirach, more commonly known as Ecclesiasticus, say of physicians 300 B. C.?

“Honor a physician with the honor due unto him; for the Lord hath created him.” “For of the most high comes healing, and he shall receive honor of the King.” “The skill of the physician shall lift up his head, and in the sight of great men he shall be an admiration.” “Then

give place to the physician, for the Lord hath created him; let him not go from thee, for thou hast need of him.”
“He that sinneth before his maker, let him fall into the hands of the physicians.”

18. Do we find the use of plasters mentioned in the Old Testament ?

Yes. There are many parts in the Old Testament where we read of the use of plasters and external applications, but there is little if any reference to the internal administration of drugs.

19. What is the earliest mention in medical history of the use of narcotics ?

In Genesis xxx. 15 there is mention of Rachel begging of Leah the Mandrakes (Mandragora) gathered by Reuben.

20. How may the history of Jewish medicine be divided ?

Into two periods. The first furnishes the medicine of the Old Testament; the second that of the Talmud. Jewish medicine was almost exclusively a medicine of the state, not a private profession.

Talmudic medicine gave evidence of Greek methods and Greek science.

21. What was the state of surgery among the Jews ?

The surgery of the ancient Jews was very primitive. The seal of the covenant, or circumcision, was practiced; this was probably adopted from the Egyptians.

Castration was practiced, although it was forbidden by law. They understood hernia, and if a man had it he was expelled from the congregation. Their knowledge of obstetrics was scanty. Artificial abortion was forbidden. Jewish anatomy was non est.

22. Next nation to which medicine descended ?

To the inhabitants of India.

23. What does Baas say of Indian medicine ?

Baas says the Indian medicine is the fourth in point of antiquity, and that the Greeks probably influenced Indian medicine. Like the medicine of the Egyptians, Babylonians and Assyrians, it was a priestly medicine. The medical writings of the ancient Indians are contained in their sacred books, the Vedas, which originated about 1500 B. C., and which were preserved by oral tradition until 1500 A. D.

Charaka says that the sacred sages or Munis, being grieved at the weakness and suffering of mankind, assembled in the Himalaya mountains and resolved on sending one of their number to heaven in order to acquire a knowledge of medicine. Bharadwaja was sent and brought back the knowledge contained in the Ayur Veda.

24. What king in India in the 3d century established places of relief for man and beast ?

According to the inscription cut in the solid rock of Northwestern India, king Azoka directed the establishment of these depots in different parts of his territories.

25. What was required of a medical student in ancient India ?

He must be the son of a respectable family, who is either the son of a medical practitioner, or of one who respects the medical profession. Medical instruction was oral, all the medical doctrines were learned by heart, and imparted by the Brahmans, and began in early youth. Even in the present day the Indian students learn the Vedas from the lips of the Brahmans, and never from a manuscript. The pupil must begin early in the morning (after having rinsed his mouth, evacuated his bowels, and prayed to the sacred cow and the gods), and cease late at night.

26. Explain the therapeutics of the Hindoos.

Susruta divides medicine into two classes, those which evacuate bad humors from the body, as purgatives and

emetics; and those which diminish the exalted action of the humors, and restore them to their healthy state. He arranged medicine into 37 heads. Their *Materia Medica* was very extensive. It included not only drugs but metals also. The medicines were prescribed in many different forms. The general opinion was that medicine should be taken on an empty stomach. Among the groups of medicines were sedatives, stimulants, tonics, emetics, purgatives, etc.

External as well as internal remedies were used. Venesection and cupping were common. Inhalations through the mouth and nose by means of tubes was practiced. Inoculation of the natural and artificial virus of small-pox was practiced as a prophylactic means. Their knowledge of toxicology was very great. Charaka divided the causes of diseases into 3 classes; 1st, from matter or objects of sense; 2d, from improper exercise; and 3d, from the seasons. There are three sorts of medicines, one sort to cleanse the body when taken internally as emetics, and purgatives; another sort purifies the external body when applied externally, as oils, diaphoretics; the third is the use of the knife or instruments, as fire and escharotics. The general treatment of disease Susruta says is to promote the just balance of the elements and humors, by a judicious choice of aliment, and by such means as assists the vital principle in the completion of assimilation; attention being paid to diet, the object is to be effected by emetics, purgatives, and blood-letting. Fevers were recognized as having critical days. The therapeutics of the Indians was guided by the curability of the disease. If the disease belonged to the incurable class the physician would not take the patient under treatment; but would advise him to go forth into the desert. Herodotus says "Whosoever among the Indians becomes sick goes out into the desert, and lays himself down there; no one cares or troubles about him whether he be sick or dead."

27. Describe how the Chinese doctor treated his patient ?

The doctor being ushered into the hall or principal room, is met with bows and salutations by the father, or elder brother of the family. Tea and pipes are offered in due form, and he is requested to feel the pulse of the patient. If a male, he sits opposite to him; if a female, a screen of bamboo intervenes, which is only removed in case it is necessary to see the tongue.

The right hand is placed upon a book to steady it, and the doctor, with much dignity and a learned look, places his three fingers upon the pulsating vessel, pressing alternately with each finger upon the inner and outer side, and then making with three fingers steady pressure for several minutes, not with watch in hand to note the frequency of the beat, but with a thoughtful and calculating mind, to diagnose the disease and prognosticate its issue. The fingers being removed, the patient immediately stretches out the other hand, which is felt in the same manner. Perhaps certain questions are asked of the father or mother, concerning the patient, but these are generally few, as it is presumed the pulse reveals everything needful to know. Ink and paper are produced and a prescription is written out, which consists of numerous ingredients; but there were only one or two of prime importance, the rest were adjuvants. They are all taken from the vegetable kingdom and were of little efficacy. The prescription was taken to a drug store to be dispensed. The prescriber seldom made up the medicine himself, and as large doses were popular, so the decoction sometimes amounted to pints and even quarts. Powders, boluses, pills, etc., were also used. If the patient was an important person, the nature of the disease, prognosis and treatment were written down, for the inspection of the family; but generally the doctor and the patient's friends were satisfied with a verbal communication. The doctor returns to make another visit if invited,

otherwise not. (Extract from Dr. Hobson's visit of a Chinese physician.)

28. What pulses did the Chinese physician believe in, and describe them?

LEFT WRIST.

Inch when lightly pressed indicates the state of the small intestines.

Inch when heavily pressed indicates the state of the heart.

Bar when lightly pressed indicates the state of the gall bladder.

Bar when heavily pressed indicates the state of the liver.

Cubit when lightly pressed indicates the state of the urinary bladder.

Cubit when heavily pressed indicates the state of the kidneys.

RIGHT WRIST.

Inch lightly pressed shows the state of the large intestines.

Inch heavily pressed shows the state of the lungs.

Bar lightly pressed shows the state of the stomach.

Bar heavily pressed shows the state of the spleen.

Cubit lightly pressed shows the state of the San tseaou or three passages.

Cubit heavily pressed, that of the man or gate of life. These last two are purely imaginary organs.

29. In the tenth century what was the opinion of the noted Chinese physicians regarding anatomy and physiology?

Dr. Harland has described the anatomy according to the Chinese idea. They do not distinguish between venous and arterial blood, nor between muscles and nerves. The brain is the abode of the Yin principle, and at its base (where there is a reservoir of the marrow) communicates with the

whole body. The larynx goes through the lungs to the heart and the pharynx passes over them to the stomach. The lungs are white and are placed in the thorax; they consist of six lobes or leaves suspended from the spine. Four are on one side and two on the other. Sounds proceed from them and they rule the rest of the body. The center of the thorax is the seat of the breath. Joy and delight emanate from it, and it cannot be injured without danger. The heart is under the lungs and is the prince of the body; thought proceeds from it. The pericardium comes from and envelops the heart and extends to the kidneys. There are three tubes from the heart, one to the spleen, liver and kidneys. The liver is on the right side, and has seven lobes. The soul resides in it, and sickness emanates from it. The gall bladder is below and projects upward into it, and when the person is angry it ascends. Courage dwells in it. The pelvis, skull, forearm and leg are considered as single bones, the processes of the joints being dispensed with and the bones being considered as a sort of framework. As to the circulation of the blood, they think that the spirits and the blood run through the body in twenty-four hours. This circulation begins in the morning at three a. m. and ceases next day at the same time and place.

30. Explain how the missionary, Father Ripa, was cured in seven days by a Chinese physician.

In his memoirs Father Ripa tells how he was thrown from his horse and left fainting in the street. He was carried into a house, when a surgeon soon visited him. He made him sit up in bed, stripped him to the waist, made him hold his neck over a basin and for some time poured cold water over him. This was to staunch the blood and to restore him to his senses, which Father Ripa says it did. The head was then bound with a band drawn tight by two men, who held the ends. The doctor struck the

intermediate parts with a piece of wood. This was to set the brain, which was thought to have been dislocated. He was then made to walk, bare to the waist still, in the open air, supported by two men, while the surgeon threw cold water over the naked chest. As this made him draw breath very vehemently, and as his breast had also been injured by the fall, he suffered greatly, but was informed that if any of the ribs were dislocated the violent breathing would restore them to their natural position. He was then made to sit on the ground while the doctor forcibly held a cloth over the mouth and nose; this also was to make the heaving of the chest force back any ribs which might be dislocated. The wound in the head was stuffed with burnt cotton. He was made to walk much and not to sleep till ten that night, when he could have a little rice soup. The walks, while fasting, were to prevent the blood from settling on the chest. Father Ripa says, that under this treatment he was made well in seven days.

31. When, where, and by whom was the first modern hospital opened in China ?

In 1880, Li Hung Chang, at the instance of Dr. Mackenzie, an English physician, opened a hospital for the natives at Tien Tsin, the port of Peking. This hospital contains forty beds, with a dispensary, waiting, operating, and lecture rooms, under the direction of Dr. Mackenzie.

32. Give the dietetic rules laid down by Confucius 500 years B. C.

Be virtuous; govern your passions; restrain your appetite. Avoid excess and highly seasoned food; eat slowly and chew your food well. Do not eat to satiety. Breakfast betimes; in winter a glass of wine is an excellent preservative against cold air. Make a hearty meal about noon and eat plain meats only. Avoid salted meats, those who do eat them often have pale complexions and a slow pulse, and they are full of a corrupt humor. Sup

betimes, and let your meat be neither too much nor too little cooked.

Sleep not until two hours after eating. Begin your meals with a little tea, and wash your mouth with a cup of it after eating. Be very moderate in the use of all of the pleasures of sense, for all excess weakens the spirits. Walk not too long at once; stand not for hours in one posture. In winter keep yourself not too hot, nor in summer not too cool. Immediately after you awake rub your breast in the region of the heart with the palm of the hand. Avoid a stream of air as you would an arrow. Coming out of a warm bath, or after hard labor, do not expose your body to cold. If in spring there be two or three days that are warm, do not be in haste to put off your winter clothes. Wash your mouth with water or tea before you go to bed, and rub the soles of your feet warm. When you lie down banish all thought. Temperance is the best physic.

33. Describe the state of medicine in ancient Japan ?

In Japan the system of medicine was very similar to that of China. They had borrowed from their neighbors in China all their whims and prejudices. They were afraid to let blood and had no notion of anatomy. They employed the actual cautery for every disease. The most common form was by means of the Moxa, which was a substance prepared from the dried leaves of the *Artemisia vulgaris latifolia* (a species of mugwort), and which was burnt upon the skin to produce an eschar or sore. The Japanese thought it should be gathered only upon days selected by the astrologers, and which possessed the benign influence of the heavenly bodies. Its preparation was kept a secret. With the Moxa they burned every body, either with the purpose of curing or with the idea of preventing. It was especially recommended as a pre-

ventative medicine and was given to the healthy. People who regarded health were accustomed to be burnt every six months, and this was so much observed that even those who were imprisoned for life were taken from their dungeons once every six months and burnt with the Moxa, very much on the same principle that people take something for the blood in the spring in this country.

34. Has medical knowledge advanced in Japan ?

At this day the practice in Japan is divided into the old and the new, the old being borrowed from the Chinese, and the new from the more civilized nations. Until the country was opened to foreign intercourse in 1859, it was all old style; to-day there are hospitals conducted on the plan of modern science in all the large cities. Certain of our text-books have been translated into Japanese. The surgery of the Japanese was very primitive before 1859. Since then it has been much improved by Japanese who have been educated in surgery in Europe. Obstetrical practice is in the hands of the midwife. Puerperal fever is rare in Japan. Syphilis is treated with mercury. There are many mineral springs in Japan, and they are greatly patronized by the people.

35. Describe medical treatment in Siam.

They think all nature composed of four elements, earth, water, fire and wind. The human body is made up of these elements, which are of two classes, visible and invisible. The visible parts are such as can be seen, as the bones, flesh, blood, etc. The invisible class or the spiritual are the wind and the fire. The body is composed of twenty kinds of earth, twelve kinds of water, six kinds of wind, and four kinds of fire. The body is divided into thirty-two parts. There are ninety-six diseases to which the human body is subject, on account of the derangement of the earth, water, fire and wind.

Too much fire makes fever, and too much water makes dropsy. They have a large pharmacopœia, and give compound prescriptions. The following is a prescription for snake bite: Part of the jaw of the wild hog, part of the jaw of the tame hog, part of the jaw of a goat, portion of a goosebone, of peacock bone, of tail of a fish, part of the head of a venomous snake. Burnt human bones and alum are powdered and sprinkled on ulcers, they use the eye teeth of savage animals ground fine for fevers. Every native physician has an image of Pra Ruse in his house. All the drugs are placed in this idol's hands and receive his blessing.

The Siamese never practised dissection, and know nothing of anatomy. Their midwifery is peculiar. When the woman is taken in labor, several women and a midwife are summoned. The patient is laid on her back, and an attendant constantly presses the belly and uterus alternately downwards and backwards. This is continued for five or six hours, if necessary. If this fails, a woman treads with her feet upon the abdomen, above the uterus. Or a bandage is passed beneath the arms of the poor victim, and she is raised aloft, while several women hang to her feet until the child is born and the perineum is ruptured. Some slight improvements have been made recently in the medicine of Siam.

36. How was inoculation practiced in Thibet, for small-pox, in 1892?

The Lamas used a method of vaccination, or inoculation. A quantity of virus is procured from a number of ripe small-pox pustules, and is made ready for use by diluting with water in a small earthenware dish. The instrument used is made of four long needles tied firmly together. This is dipped into the diluted virus and then rapidly and deeply prodded into the skin and muscle back of the thumb. This usually brings an attack of variola,

which is mild from the dilution of the virus, and runs an irregular course. But this does not prevent future attacks.

37. Give a description of medicine and surgery as practiced in the South Sea Islands.

Medicine and surgery are treated as occult sciences, and confined to a few who are objects of great veneration, and who often hold the powers of life and death in their hands. In the New Hebrides almost every ailment is thought to be the result of witch-craft. So great a dread is there of these disease-makers, or wizards, that life is embittered by fear of their power. On some islands disease is treated solely by jugglery, and the doctor is a priest and a conjurer. Disease is an evil spirit to be exorcised, and this is thought to be done by transferring it to the body of some other person. Among several of the eastern Polynesian tribes, as Tahiti, Samoa, and Tonga, therapeutics takes a sensible form, and they have quite a pharmacopœia. These remedies are chiefly from the vegetable kingdom. The natives of the Loyalty Islands drink large quantities of sea water as emetics. Bathing in the hot sulphur springs of Tamia is common for the same purpose, and the natives bathe in them to produce abortion.

The surgical operations are very crude. Bleeding is freely and fearlessly practiced in most of the inflammatory diseases. Deep gashes are often made in the limbs with very serious consequences. In the Loyalty group they think that headache, neuralgia, vertigo, and other cerebral affections proceed from a crack in the head or pressure from the skull on the brain. This they remedy by laying open the skull by a cross or T incision, they then scrape the bone carefully and gently until a hole is made in the skull down to the dura mater about the size of a dollar. So fashionable has this operation become that it is said that almost every one has a hole in his cranium.

38. Tell something about the medical school in modern Greece.

Modern Greece has a medical school in Athens which was founded in 1833. There are members of certain Greek families who practice in accordance with ancient tradition, and follow after the old Asclepiadæ. Popular medicine is as in the East; God, the devil, enchantment, and worms, are the cause of disease. Prayers, exorcism, magic arts, certain saints, charms containing the name of Christ, God, and the Holy Virgin, are the means of cure. The editor of the *Boston Medical and Surgical Journal* visited Athens in 1851, and gives a very interesting account of the state of medicine in the classic capital. He says: "Athens has a university with four faculties, theology, law, philosophy and medicine. The medical faculty is composed of six ordinary, one honorary, and five candidate professors. There were then about one hundred and thirty medical students in attendance. They were required to attend the lectures four years, and were required also to attend the lectures in the school of philosophy. They were taught natural history, botany, chemistry, anatomy, physiology, nosology, pharmacy, surgery, obstetrics, medical jurisprudence, hygiene, pathological anatomy, and attended medical, surgical and obstetrical clinics. They were required to pass a written and oral examination before graduating, and then to practice in Greece they must undergo an examination by the medical council.

39. In relation to Greek medicine who was Chiron?

Chiron was one of the most important persons in Greek medicine. He was represented as half horse and half man. He was celebrated throughout all Greece for his wisdom, and most of the great princes and heroes of the time were his students. He was especially skilled in surgery. It was from Chiron that we get the name Chirurgical.

40. Who was Æsculapius and what did he do for medicine ?

He was the son of Apollo by Coronis, and one of the pupils of Chiron. He was the first to cultivate medicine, and met with such success that great honors were conferred upon him, and he was by the Greeks called the God of Physic. He flourished in the 13th century B. C. His skill was so wonderful, that he not only prevented the sick from dying, but he recalled the dead to life again. It is generally thought that he was born at Epidaurus, a city of Argolis, where he had a temple and a famous oracle. There are many legends concerning his birth and life.

Plato says that the skill of Æsculapius was mostly confined to the dressing and healing of wounds, with herbs for arresting hemorrhage, and soothing pain. Plutarch says this included all of Greek medicine. Aside then from simple remedies of the vegetable kingdom, Æsculapius seemed almost always to depend upon prayer and invocation to the gods, which is indeed the most ancient of all cures. In the temple at Epidaurus Æsculapius was represented as a man somewhat advanced in life, but of attractive appearance, seated upon a throne. His hair and beard were long. In his left hand he held a staff, and the other he held over the head of a serpent. At his feet was the figure of a dove.

41. Who were the Æsclepiadæ ?

They were the priests attached to the worship of Æsculapius. They formed a particular caste, governed by sacred laws, like the priests of Egypt. One of their laws forbade revealing sacred things, except to the elect, and strangers to be admitted to this knowledge must submit to an initiation. The Æsclepiadæ employed certain medication, such as venesection, purgatives, emetics, friction, sea-baths, and mineral waters. The patient could not interrogate the oracle until he was purified by abstinence, fasting, prayer and sacrifices.

42. Describe the serpent of Æsculapius.

The serpent was always associated with Æsculapius. Pausanias says that there was in Epidaurus a species of small serpent of a yellow color, sacred to Æsculapius, gentle and harmless to men. Pliny tells us that the Epidaurian snake was first brought from Epidaurus to Rome, but later it was reared even in the houses at Rome, inasmuch as the people prized it. This snake is known as the Coluber Æsculapii, and as Elaphis Æsculapii. It is about three or three and a half feet long, and as thick as a stout walking stick, orange-brown and yellow in color. It is very active and can climb trees.

43. What relation has the serpent to medical symbols ?

The staff and serpent are the emblems of Æsculapius. Apollo is often represented with a staff and serpent, and as he was the father of Æsculapius, it may be in this way that Æsculapius inherited his symbols. There have been many ingenious explanations of their origin. The staff of Æsculapius is like a walking stick, with the serpent encircling it with its head up. Some have traced the staff back to the Egyptian Thoth. The serpent is meant to represent the prudence so needful to the physician; the periodical renewal of its skin symbolizes the renewal of youth. It has also great longevity. The change from winter lethargy to activity in the spring reminds of convalescence. Serpents were supposed to have curative virtue; also the power to discover healing herbs. As far back as it is possible to trace, the Egyptians had a serpentine divinity, consequently the origin of the serpent is veiled in obscurity.

44. Give a short sketch of Hippocrates, and say whether he was the first or second Hippocrates.

Hippocrates the second was the grandson of Hippocrates the first, and was a descendent of Æsculapius. In

boyhood he was sent to Selimbria in Thrace, near where Constantinople now stands. Here he was placed under the tuition of Herodicus. He passed some time in studying under different masters, and in traveling through the different Greek cities of Europe and Asia. He then returned to Cos, where he devoted himself to the careful study of the medical records to be found in the votive offerings that hung in great profusion about the walls of the Æsclepiads. He soon began to have a reputation as a physician, and his name was known not only over Greece, but in foreign courts also.

Hippocrates is said to have passed his life in traveling and in the observation of disease. He even penetrated into barbarous countries. He made many brilliant cures in his life which contemporary writers have made mention of. He rendered a great service in stopping a plague which broke out in Athens in the time of Pericles, for which he was given a golden crown and the privilege of Athenian citizenship. He passed the last years of his life in Thessaly, in Larissa, Phera, Tricca and Meliboea, making observations on the diseases of these towns. He died at Larissa in his 99th year, and left behind him many writings on medicine. So great was his influence on medicine that it was no longer called the art of Æsculapius, but the science of Hippocrates. He taught liberally and candidly, but he administered an oath to his disciples which has been handed down to us, and until recently was given to all medical graduates.

45. At what time did he live ?

Between 460 and 370 B. C. Or in the age of Pericles.

46. Give the oath of Hippocrates.

“I swear by Apollo, by Æsculapius, by Hygeia and Panacea, by all the Gods and Goddesses, calling them to witness that I will fulfil, according to my power and

capacity, the following oath and promise: I will hold my master of medicine in the same rank as the author of my being; I will share with him my fortune, and occasion permitting, I will provide for his wants; I will consider his children as my brothers, and if they wish to learn the medical art, I will teach them without salary or price. I will share my precepts oral, and any lessons or knowledge, with my sons, with those of my master, and with pupils bound by a promise, and an oath, in accordance with medical law, and with no other person. I will direct the regime for the sick, for their good according to my power and judgment, and I will abstain from all wrong and injustice. I will give no person any poison, though he ask for it, nor will I take the initiative in such suggestions; in like manner I will use on no woman any instrument for producing abortion. I will pass my life and exercise my art in innocence and purity. I will not practice the art of taking stone from the bladder, but will leave that for special practitioners. Into whatsoever house I enter, I will go for the cure of the sick, refraining from every voluntary corrupt act, and especially from the seduction of women and boys, free and slave. Whatever I see or hear in social life during practice or even out of the practice of my profession, I will keep to myself that which need not be divulged, regarding discretion as a duty in any such case. If I keep this oath without breaking it, may it be given to me to enjoy happily my life and profession, always honored among men; if I violate it and perjure it may the contrary be my fate."

47. Describe the great Alexandrian medical school, and when was it founded?

The great school of Alexandria was founded between 233-30 B. C. by the Ptolemies, who succeeded Alexander in Egypt. The teachers were supported by the government, and scholars came from all parts of the then-known

world, for Alexandria was looked upon at that day as we now look upon a course in Europe, namely, as necessary to complete our medical education. Here the physicians discussed the ancient writings and founded new doctrines for the study of medicine. Medicine, botany, and physics were the principal branches, and to have graduated from Alexandria was enough to secure the physician success anywhere he practiced the profession. So zealous were the teachers in this school to advance their knowledge, that men were dissected alive to discover the anatomy and pathology of the various diseases. The two particular fields in which this school advanced the science of medicine were anatomy and materia medica.

48. Who were the two remarkable anatomists of the Alexandrian school, and give sketch of what they did ?

Herophilus and Erasistratus of the Alexandrian school were the first real anatomists. Herophilus invented many technical terms still in use, such as the Duodenum, the Torcular Herophili. He investigated the anatomy of the nervous system, and noted the distinction between the nerves of sensation and motion. He distinguished the cerebrum from the cerebellum. He described the membrane covering the brain and named it the choroid. He believed the brain to be the seat of sensation and the centre of the nervous system; described the tunics of the eye-ball and named two of them the tunica arachnoides and the tunica retina. It is said that he was the first to operate for cataract. He observed the difference between the coats of the arteries and veins; noted the pulse and its rhythm, and that the pulsating force came from the heart. He observed the lacteals, and is said to be the father of pathology. Galen thought his anatomy perfect. He was a therapist. He gave large doses of medicine and drastic purgatives. He gave compound medicines. Fischer says that the system of polypharmacy had in him its origin.

Erasistratus also dissected the living body. He noted the convolutions of the brain, and said that they were undoubtedly there for some purpose or particular end. He wrote treatises on anatomy, wounds, causes and treatment of diseases, on fevers, hygiene, and on poisons. Erasistratus was mild in medication; opposed purgatives, used instead mild enemas. He advised abstinence, diet, regimen, bathing, friction, exercise, used the simplest of vegetable medicine and reprobated in no mild terms the empiricism of the system of polypharmacy of that day. In surgery he was very daring. He opened the abdomen, and in abscesses of the liver and spleen he applied medicine directly to them. He objected to tapping in dropsy, and to the extraction of teeth when it required force. In retention of the urine he employed a catheter which he invented. He first settled the fact that the trachea was not a passage for liquids, but was an air passage.

49. What classes were medical practitioners divided into at this time?

1st. Dietetic, or real physicians, who took the highest rank and followed the widest study. 2d. Pharmaceutists; these being not like our druggists, but persons who treated ulcers, wounds, etc., by the external application of drugs. 3d. Surgeons, who confined themselves strictly to manual operations, such as the use of the cautery and the knife.

50. What relation had kings to medicine in the 2d Century B. C.?

The last king of Pergamos was celebrated for his medical skill, and especially for his knowledge of botany. He cultivated in his garden poisonous plants, such as the hyoscyamus, aconite, hemlock and hellebore. He made experiments with these as poisons, and to discover their antidotes. He was not a good man, and it is said that he lived and governed in a most pernicious manner. As soon as he had succeeded his uncle, he caused all who had

served his father and uncle to have their throats cut, and put many others to death on the slightest suspicion. He poisoned good plants with the juices of the bad and sent them to his friends. But he soon died and left all he had to the Roman people.

51. Give a short sketch of Mithridates.

He was king of Pontus, and a great warrior. He gained considerable knowledge of poisonous drugs. He spoke twenty-two languages. He reigned from the year 120 to 63 B. C. He tested on criminals the action of poisons, and their antidotes. He was in such great fear of being poisoned that he daily took poisons and their antidotes, to keep his system inured against them. Two plants bear his name, the eupatorium and a species of garlic. Pompey finally took his stronghold, and in it was found Mithridates' diary, in which he said he had poisoned many persons, among them his own son, Ariarathes, and Alcaeus of Sardis, because the latter had beaten him in a chariot race. When he was deserted by his army, he retired to his apartments and took poison, but, on account of his previous habit of taking poison, it had no effect on him, so he fell on a sword. This not sufficing, he was compelled to ask a Gaulish soldier to end his suffering.

52. Give a short account of Archagathus the executioner.

He was a Greek physician who went to settle at Rome in the beginning of the reign of Ptolemy Philopater in Egypt, and when Lucius Æmilius and Marcus Livius were consuls. He was the first of all the Greeks who attempted to introduce their kind of physic into Italy. At first his coming was very agreeable to them, and many marked distinctions were paid him, but when he came to the cutting and burning part they changed their opinion, and conceived such an aversion to him that he was compelled to leave the city. He was called executioner on

account of the too frequent use of the actual cautery and the knife. He was also called *Vulnarius* and *Carnifex*. He was honored by the Senate.

53. Who was Asclepiades, give a biography of him, and describe his mode of treatment ?

He was a wandering Greek scholar who went to Rome in the first century B. C. to teach rhetoric, but failing, he took up the study of medicine. He was a native of Prusa, in Bithynia. He was not of the family of *Æsclepiads*, although of the same name. He does not seem to have followed any course of medical study, but owing to his fashion of catering to the patient and avoiding everything that was painful and disagreeable, he soon gained a large practice. He eschewed emetics and purgatives, though he practiced blood-letting. He also relinquished the religious ceremonies which had held so large a place in medical practice. He taught that all matter was composed of exceedingly small, yet divisible particles, called atoms. The human body was composed of an aggregation of these atoms. The human body was composed of very permiable tissues, pierced with invisible holes which he called pores through which passed and repassed continually atoms of various sizes. All physiological and pathological functions were the result of the spontaneous movement of these atoms. If these particles moved normally (quiet and regular) the body was healthy, but if the motion of these particles was not normal (irregular or feeble) sickness would result. Sickness, also, could originate in the air or food. Fever was due to the atoms moving rapidly, chill to the atoms being quiet. His treatment was mainly dietetic and hygienic. He advocated exercise, bathing, music, and even declamation as a means of curing disease. He ridiculed the critical days of Hippocrates. His plan of treatment was to close the pores when too open, and to open the pores when closed. His knowledge of anatomy

was very slight. He thought that the urine passed from the intestines into the bladder through the pores. Digestion he thought unnecessary. Thirst came from the relaxation of the smaller pores, and hunger from relaxation of the larger pores. The stoppage of the largest atoms caused pain. He advised opening of the wind-pipe in violent angina to prevent suffocation. Asclepiades founded a school which was of great repute among the ancients. By Apuleius he was called the Prince of Physicians, and second only to Hippocrates.

54. Give sketch of Themison.

He is credited with being the founder of the Methodist school, and he lived in the time of Octavianus Cæsar. He promulgated to the medical world a new way to cure disease. In some things he followed Asclepiades, in others he utterly rejected his notions. He thought that disease was divided into two great classes, acute and chronic. Each of these classes he separated into three species—the constrictive or contracted, the fluxionary or relaxed, and the mixed. This meant impeded or increased secretions, or too much discharge from one part and not enough from another. His was a method of observation, and the characteristics common to the same species of disease were by him called communities, and sometimes similitudes. Thus they had only two kinds of therapeutical measures to fulfill—to relax when there was constriction, and to constrict when there was relaxation. All therapeutic agents were comprised in the two communities; for the community of relaxants there was blood letting, cupping, emollient cataplasms, warm and laxative drinks, sudorifics, warm air, sleep, and exercise carried to fatigue. In the community of the astringents there was darkness, fresh air, cold and acid drinks, red wine or vinegar, solution of alum, etc. This sect sometimes admitted a third cure which they called prophylactic. This comprised the

special means in use to arrest the effects of poisons or venoms. His school repudiated purgatives, diuretics, emenagogues, anodynes and sleeping potions, but gave an occasional emetic to clean out things generally.

55. Who made the first application of electricity in medicine ?

One of the pupils of Themison—Scribonius Largus.

56. Describe the state of Rome just before the Christian era.

Draper tells us that just before the coming of Christ Rome was very wicked. Rome then contained two millions and a quarter of inhabitants, but of these only about ten thousand were of the gentry, the upper ten; there were about one hundred and twenty-five thousand populace or plebs. The plebs were often paupers in feeling, many of them were given public alms; they had cheap board, free admission to the theatres and gladiatorial shows, where the combats of the gladiators was not calculated to impress with fine feeling. There was about a million slaves, held as chattels, in the most abject misery. They might be killed at the will of their masters, and sometimes they were horribly mutilated, the physicians often having to perform these acts. There was no middle class at Rome. All these were kept in order by the numerous guards, generally mercenaries and foreigners. In Cæsar's time, Rome the city which ruled the world was terribly depraved. Politicians had become demagogues; the concentration of power and increase of immorality proceeded equally. The Roman power included one hundred and twenty millions of people. Wealth was the only standard of social distinction. Law was of no value; the suitor was compelled to deposit a bribe before a trial could be had. Draper in his intellectual development of Europe says of this period of Roman history: The social fabric was a festering mass of rottenness. The people had become a populace; the aristocracy was demoniac; the city was a hell. No crime that the

annals of human wickedness can show was left unperpetrated—remorseless murders; the betrayal of parents, husbands, wives and friends. Poisoning was reduced to a system; adultery degenerated into incest, and crimes that cannot be written. Women of the higher class were so depraved, lascivious and dangerous, that men could not be compelled to contract matrimony with them; marriage was displaced by concubinage; even virgins were guilty of inconceivable immodesties; great officers of state and ladies of the court of promiscuous bathings and naked exhibitions. In the time of Cæsar it had become necessary for the government to put a premium on marriage. He gave rewards to women who had many children; prohibited those women under forty-five years of age and having no children, from wearing jewels and riding in litters, hoping by such social distinctions to correct the evil. It went from bad to worse, so that Augustus in view of the general avoidance of legal marriage, and resort to concubinage with slaves, was compelled to impose penalties on the unmarried—to exact that they should not inherit by will except from relations. The Roman women reckoned the years not from the consuls but from the men they had lived with. Gluttony was carried to loathsomeness. It was said of them—they eat that they may vomit, and vomit that they may eat. At the taking of Perusium, three hundred of the most distinguished citizens were solemnly sacrificed at the altar of Divius Julius by Octavius. Moral principle was extinct, it was a nation of atheists. Religious sentiment was entirely effaced. It was skeptical thought that governed the minds of the scholars; Varro, one hundred and ten years B. C., said that the gods were to be received as mere emblems of the forces of matter. Lucretius recommends that the mind be emancipated from the fear of the gods; Cicero was a skeptic. Some thought a virtuous life should be lived;

some were cynics, some stoics. Epictetus, the slave and philosopher, taught that suicide was man's privilege. Seneca said that time is our only possession, and that nothing else belonged to man. And we may well understand the influence all this must have had on the medical doctrines of the physicians of that time.

57. What effect had Christianity on medicine ?

Rutherford Russell says that it is likely that Christianity must at first have acted injuriously on medicine. Jesus Christ was celebrated as a healer; he went about healing the sick and restoring to life. To the people of his time his principal occupation was the healing of the sick. This power possessed by the Saviour was given by him to his disciples. Luke had been a physician; but how could he prescribe after the manner of men, when he was able to heal by the grace of God? Thus medicine based as an art on the natural order of things, was for a time superseded by the preternatural power of certain men. But between religion and science there was a barrier great and unsurmountable.

58. Give sketch of Aurelius Cornelius Celsus, and his method of treatment.

He was a distinguished scholar who lived at this time. He was of the methodic sect, but by some it is thought that he only studied medicine as a part of philosophy, as was the fashion in those days. He lived from 25 B. C. to 40 A. D. The place of his birth and death are unknown, although we have good reasons to believe that he was a Roman. Celsus was a common name; there were many distinguished men bearing that name, and there has been some confusion in regard to the identity of them. Our Celsus was a voluminous writer. He wrote treatises upon the art of war, architecture, philosophy, rhetoric, agriculture, and other topics. All of these have now been

lost except the eight books *De Medicina*, on the subject of medicine and surgery. He was greatly esteemed by Columella and by the naturalist Pliny, and was called the medical Cicero, so polished and finished was his diction. For many years Celsus has been used in England as a test of Latin scholarship, and of a liberal education, for if the student was familiar with Celsus he received the purest Latin of the Augustinian age. The medical writings are in eight books: the first four treat of internal diseases; the fifth and sixth of pharmacy; the seventh and eighth of surgery. The surgical books have been especially praised. It is well to remember that these eight books on medicine are but parts of an enormous encyclopædia compiled by this illustrious worker and scholar. Celsus, in his works, gives first a sketch of the origin, early development and progress of medicine, including the doctrines of the great Dogmatic and Empiric schools of his day, into which medicine was divided. His knowledge of anatomy was somewhat superficial; he, however, defended anatomy against the slights of the Empirics, who you remember neglected it. His osteology is complete and accurate, and must have been written from the examination of the human body and skeleton. He mentions the diaphragm, peritoneum, omentum, jejunum, pylorus, ureter, zygoma, vertebra, femur and cartilage. He also describes certain organs in connection with surgical operations. The science and practice of medicine was, before his time, divided into three parts. The practitioners of the first part, the Diatetece, or dietetics, endeavored to cure by diet without medicine, the pharmaceutics by medicine, and the chirurgics by manual operations. But Celsus treated by all these methods of cure, devoting an equal amount of attention to each of them.

59. Were any medical examinations required at this time ?

No. Renouard says: "In the midst of this overflowing of charlatanism, the health of the citizens was given over to the first imposter who called himself a doctor; for how could the cheat and usurper of the title be distinguished from the man of knowledge and probity, who had acquired it by study? No examination, no legal proof was imposed on any one who wished to practice medicine; there was no security for the sick."

60. Who was Thessalus of Tralles ?

He was the prince of charlatans and quacks that abounded in Rome at that time (A. D. 54-68). A man of the lowest birth and without education, but like most narrow-minded physicians, his conceit was extravagantly superb. He was of Nero's day. He was very sagacious and cunning, and a most consummate hypocrite. So that being very obsequious to his patients, insolent to his fellow physicians, profuse and extravagant in dress and retinue, and with an unlimited amount of what we now call *brass*, he soon succeeded in gaining fame and fortune. In attendance on his patients he stooped to the most servile duties. He was quick to force away other physicians, of whose approaches he asserted himself to be an ever watchful guard. He permitted the sick and infirm to act very much as they pleased. He lived with the lowest of the populace, such as cobblers, weavers, tailors, and degraded artisans who idolized him. Renouard says of him: "He would only appear in public accompanied by a troop of bakers' boys, butchers, weavers, carders, and others of the lowest classes of society, to whom he gave the name of pupils, and whose vulgar language it is said he used." So brazen was he that he wrote a letter to the emperor Nero, declaring that previous to himself, no physician had found anything certain for the cure of disease

and preservation of health. He declared the whole medical art could be taught in six months. He called himself the "Conqueror of Physicians."

Pliny and Galen both write of him with disgust and contempt. His medical system differed but little from that of Asclepiades and Themison. They both, however, thought that sickness and health consisted in a certain symmetry or proportion between the forces and primary corpuscles, and that an alteration in this or that particular part that was diseased was all that was necessary. Thesalus held that the change should not be confined to one part, but should be universal. This change was called *Metasyncrisis*, and there were certain medicines called *Metasyncritic* medicines, the use of which was very tedious. Among them were *rubefaciens* (counter irritants); *vesicants* (blisters), and *caustics*. He introduced a three days' fast at the beginning of a fever. He condemned purgatives. Galen said that Tralles had not the least idea of the action of medicines.

61. Describe Soranus of Ephesus and Cælius Aurelianus.

Soranus of Ephesus lived first in Alexandria and afterwards at Rome under Trajan and Adrian, in the first years of the 2d century. He delineated the essential differences of diseases, and wrote a work on chronic maladies. Clifton says of him that he set the last hand to the methodic school. He died about A. D. 140. He had a biographer and translator, one Cælius Aurelianus. Just when he lived is uncertain. He was an African of Sicca, a town in Numidia. He professed to have translated the works of Soranus. He also wrote a book on acute and chronic diseases; many think it was but a translation of the writings of Soranus. Cælius has given a very complete account of the school of the methodists; it is to this work of Cælius that we are indebted for so complete a knowledge of this important sect.

62. What were the Roman hospitals called at this time ?

At this time certain hospitals were established and called *Valetudinarium* and the *Veterinarium*. The one was to treat disabled and infirm soldiers, and the other was for the treatment of their horses. Surgeons were recruited for the Roman legions under the nomenclature of *Medici Cohortum*.

63. When was the practice of medicine taken from the hands of the priest, and opened to the people ?

Originally the art of medicine was entirely in the hands of the priests, and the secrets of physic were so surrounded by mystery, intelligible only to the initiated, that the people knew but vaguely of them. But after the dispersion of the Pythagoreans, at the beginning of the 5th century B. C., it happened that in Greece, through the promulgation of the medical doctrines of Cnidus and Cos, medicine became open to the people.

64. Give a brief sketch of Pliny the second.

Caius Plinius Secundus, or Pliny the Naturalist, was a most remarkable scholar who lived in Rome in the first century A. D. Born at Verona A. D. 23, he devoted his time to jurisprudence, made a campaign into Germany, and held many offices of trust. He was possessed of an uncommon spirit of inquiry, he wanted to know all about everything. It is related of him that he used to read all the time, even at meals and in the bath. He wrote many important books. His desire for knowledge was the cause of his death. For at the time of the terrible eruption of Vesuvius, in the year 79, when Herculaneum and Pompeii were destroyed, he approached by vessel very near in order to note everything of importance concerning the phenomena. He passed the night not far from the mountain. The next morning the surrounding country became enveloped in a suffocating gas or vapor and he was killed

by it. But he left us the only account we now have of that famous eruption of Vesuvius. Many of his writings are lost, but his natural history, in thirty-seven books, is still in existence. It was first put in print in Venice in 1469, as a folio. These books are a vast storehouse of wisdom in which the high culture of the author is evident. It cannot be said that Pliny was particularly the friend of the physician and surgeon, but he discovered a vast amount concerning natural productions endowed with medicinal properties that is of great value to the medical art.

65. What did Dioscorides Pedacius do for *Materia Medica* ?

Dioscorides was contemporary with Pliny, and in early life went with the armies over the world to examine personally the natural products of different countries. He wrote a *materia medica*, in which he describes about 700 plants, giving their botanical characters, modes of action, and method of preparation. He treats of drugs taken from the animal and mineral kingdoms. There were rude drawings of the plants. This book is in the form of a dictionary. He describes ginger, pepper, aloes, and sugar. He used elm bark in pustular eruptions; gave rules for detection of adulterated medicines. Of his writings are yet extant five books on *materia medica*, two on fish and venomous animals. For 1500 years after this, the first century, Dioscorides was the only work on *materia medica* held as an absolute authority. As late as the 16th century, it was the belief that there was not a plant that grew in Germany, France or England that had not been described by Dioscorides. When potatoes were introduced into Europe, they thought a description could be found of them in this wonderful book.

66. Who were the *Archiaters* ?

At first *Archiaters* was an honorary title which has been

explained to mean "physician to the prince," or "chief physician." It afterwards served to designate sometimes the physician attached to the person of the emperors, and sometimes the physicians fulfilling certain public functions in cities. There were, then, two sorts of Archiaters; one holding Palatine, who belonged to the royal household, and had high rank at court. Of this class of Archiaters, there was a head known as Count of the Archiaters. The other class were the popular Archiaters, and formed in each town a college devoted to the health of the community. Later, when medicine became subject to the law, they were also the medical examiners.

67. Who was Athenæus of Attalia, and describe the Pneumatic School?

He lived about Pliny's time, and maintained among other things, that fire, air, water, and earth are not the true elements, but that their four cardinal qualities are: heat, cold, dry and moist, the two first of which are looked upon as the efficient cause of things; and the other the material. To these he added a fifth, which he called spirit, and imagined it penetrated all bodies, and kept them in their natural state. He is said to be the founder of the pneumatic school, and also to have written more universally upon physic than any of his contemporaries. It is said he had many disciples. His system taught that the dynamic force of the soul or pneuma was the indispensable element of medical art.

68. Who was Aretæus of Cappadocia?

He was the most eminent of all the disciples of Athenæus. He believed in the air, the bed chamber, and exercise of the patient. He is highly esteemed among us to this day for the politeness of his style, the exactness of his description, and the soundness of his judgment; notwithstanding his poor anatomy and his false theory. It

is said that he was the first of the ancients to make use of Cantharides as a blister. The works of Aretæus were published in English in Philadelphia (Haswell, Barrington & Co.) in 1841.

69. Describe the state of medicine in Rome in the 2d century A. D.

At this period the medical world was divided into many sects, the Dogmatic, Empirics, Methodists, Pneumatics, Episynthetics, and Eclectics. The Empirics were the least thought of. Rome was full of quacks, and the effect of all these diverse and fanciful opinions in medicine was to lower the standard of real medical science. The physicians nowhere aimed at useful discoveries, but simply devoted themselves to making as much money as possible. In fact, medicine like everything else in Rome at this time was fast decaying.

70. Give a short biography of Claudius Galen.

He was born in the old city of Pergamos, in Mysia, in Asia Minor, in the autumn of the year 131 A. D. Pergamos, the birthplace of our hero, was celebrated for its temple dedicated to Æsculapius, its school of medicine, and its library which was second only to that of Alexandria. His father, whose name was Nikon, was a man of wealth, influence and learning. He was an architect and geometrician, and Galen tells that he was also a profound scholar, being versed in astronomy, grammar and arithmetic, and other branches of philosophy, and a man of great patience, justice, benevolence, and other virtues. His mother was a woman of violent temper, addicted to scolding, and even biting her maids. His father Nikon was his first tutor; he instructed his son in the mysteries of the philosophy of Aristotle, and spared no pains to make him a scholar like himself. In his fifteenth year he entered upon the study of philosophy and logic under

Philopater the Stoic, and other eminent philosophers. His father had intended him to become a philosopher, but in consequence of a dream changed his mind, and selected the profession of medicine for the boy.

At this time Galen was a master in dialectic declamation, he had attained celebrity, he was well equipped for all the subtleties of philosophic disputation, then so much the fashion among the philosophers. And he was accustomed to meet the most learned of his native city in disputes upon grammar, history, philosophy, and mathematics. Galen when he turned toward the study of medicine was 17 years of age. He now entered the medical school of Pergamos, here he studied under various instructors. When Galen was twenty-one his father died. From Pergamos Galen went to Smyrna, where he continued his studies under the physician Pelops. From thence he went to Corinth and followed that with extensive travel in various countries, during which time he passed some time in Alexandria; it is said that during his stay at Alexandria he practiced vivisection under Boethius, on such subjects as were procurable. His mind being matured by travel and study, at the age of 28 he returned to his native city of Pergamos.

Here he was held in such high esteem by the people that the priests of Æsculapius, through the Sovereign Pontiff or High Priest of the city, placed him in charge of the gymnasium then attached to the temple, at which the athletes and gladiators were daily in the habit of assembling to exercise. This office he held for several years, and it is said that he acquired great reputation for his skill in the treatment of fractures, and the wounds incident to the fierce combats of the time. Owing to a revolt in Pergamos, which occurred in the year 163-4, and when he was 34 years of age, he was induced to leave that city and settle in Rome. His great renown had preceded him,

and his great erudition and practical knowledge soon placed him in the first rank of his profession. For curing the wife of the Consul of a fever, he received four hundred goldpieces and the friendship of the Consul, of the Prætor, Sergius Paulus, also of the uncle and brother of the emperor. But this rapid fame and success, his professional skill especially in anatomy and ophthalmy, and his boasting soon made him many enemies. He seems to have been the fashionable physician of the city at this time. He gave public lectures on anatomy, in which he demonstrated before the consul Bœthus, whose wife he had cured, the organs of respiration and of the voice. To this school of anatomy were attracted not only students of medicine, but also philosophers, politicians, and many others of the highest rank and influence. He was greatly inclined to boasting, and was very violent and quick of temper. Soon envy at his success began to appear. It was in consequence of this enmity, and of the breaking out of an epidemic which drove his patients from Rome, that he left the imperial city after a residence of five years.

He says that he excited so much envy and ill will among the physicians of Rome, that he was afraid of being assassinated or poisoned by them. He went from Rome to Brindusium, where after passing some time he set out on a visit to the East; he visited different parts of Palestine and the isle of Cyprus. But before the close of the year he received a summons from the emperors Marcus Aurelius and Lucius Verus, who were at Aquileia—a city in Venetia, to attend them. Galen arrived at the camp at the close of the year, and was appointed surgeon-general of the army. Soon afterwards a plague broke out among the soldiers with great fury and violence, and the emperors beat a hasty retreat to Rome: on the road Lucius Verus died of apoplexy, being 39 years of age. Galen followed Marcus Aurelius to Rome, but when the emperor again

started for Germany, Galen declined to accompany him, alleging as an excuse a dream in which Æsculapius forbade him to leave Rome.

While the emperor was gone, Galen was placed in charge of Aurelius Commodus, then nine years of age, and the son of the emperor.

The prince being attacked by a severe fever, Galen was successful in curing him. He also treated Sextus, another son of the emperor, and thus secured the favor of the mother Faustina. When the emperor came back he became ill, and the physicians said that he had the ague; but Galen diagnosed dyspepsia and cured him. This greatly added to his fame, and the grateful emperor exclaimed: "We have but one physician—Galen is the only man in the faculty." Thus enjoying royal confidence, he devoted his time to practice, and to writing his immortal works on medicine. He passed the rest of his professional life in Rome. The place of his death is not known. His vast learning, his great renown as a physician, and his extensive medical writings raised Galen to the highest ranks of his time, and after his death his fellow citizens of Pergamos caused medals to be struck in honor of their illustrious countryman. Galen asserts that he was not attached to any of the many medical sects that divided the physicians of that time. He seems to have studied the principles of all the schools; for which his great learning well fitted him; but it was not long before his boasted Eclecticism became the most bigoted Dogmatism.

Galen even went so far as to assert that before him nobody had shown the right method of treating disease. He said that he had done for medicine what Trajan had done for Rome, *i. e.*, considerably extended its limits. He bade his pupils not to eulogize him in public, saying that he was indifferent to reputation, caring only for learning and virtue. It must be confessed that with all his learning,

he was inordinately vain, insolent, boastful, and superstitious. Francis Clifton says of him : " In physic he certainly did wonders, and was the great restorer of the Hippocratic system in opposition to the Methodists, who till that time had kept their ground remarkably well."

Fisher says that " Galen's private character, as it appears from many passages in his works, places him among the brightest ornaments of the age in which he lived. His writings, now extant, furnish the strongest proof that he was a man of profound learning, and of the highest accomplishments. Perhaps his most glaring fault was his inordinate vanity, and his bitterness and contempt for his adversaries. He has not hesitated to recite his own cures and vaunt his own praise.

There can be no doubt that Galen elaborated, arranged and perpetuated the principles of Hippocrates. His writings are very voluminous ; it is estimated that he wrote 500 treatises. He divided all sciences into four classes. He said the duty of the physician is two-fold : to preserve the body in health, and to restore it to a normal condition when diseased. He laid down three conditions of the body : sound, unsound and neutral. He had eight constitutional qualities based on the old Hippocratic qualities of heat and cold, dryness and humidity, which condition influenced the system. He often theorized at great length, though his notions are now exploded. Like Hippocrates, he divided diseases into acute and chronic, endemic, epidemic, and sporadic. Diseases were produced by external and internal causes. The external causes were air, food, drinks, motion, rest, sleeping and walking, retention and excretion, and lastly the passions. These were the beginning causes, the external, and set in motion the internal, or hidden causes of disease. He was also a famous diagnostician. One of his innovations was the chapters on the indications of the pulse. Galen is the

author of the famous principle of "*Contraria contrariis curantur*," or contraries are cured by contraries, in direct opposition to the motto "*similia*." That is, given a disease with a character of hot or cold, moist or dry, according to the varieties of Galen, the remedy must be selected from those catalogued as possessing opposite qualities. But besides this method Galen was fond of *nostrums*, and sometimes gave for them large sums. Much that Galen taught is practiced at the present time; his influence has extended to the 19th century.

Thus, in complicated diseases, complicated remedies are indicated; the physician shall not be content with the removal of the symptom, but it may be necessary sometimes to heal the symptom; the cause of the disease must be removed. The quantity of the remedy is indicated by the strength of the patient, and even to this day this idea has a strong hold on the people. When the strength of the patient was slight he gave gentle remedies, and when the patient was strong he gave strong enough medicine to violently combat the disease; the strength of the patient must be strong enough to outlast the disease. Constitution, temperament, age, etc., also modified his treatment. He used cupping, bleeding, purgatives, opiates, also certain specifics, as the ashes of crabs for hydrophobia. As has been stated, Galen was a most prolific writer; he wrote not only on medicine, but on grammar, mathematics, logic, ethics and philosophy. The most noteworthy are the works on anatomy, for Galen was a profound anatomist, having been taught at Alexandria, the cradle of the anatomical art. Most of the descriptive terms, both in physiology and pathology as well as in anatomy, which are now in use, were employed by him in the same sense as they are used at this day. Fisher says that whether his familiarity with anatomy was derived from human or comparative dissections is an open question, but his familiarity

with the dissecting room and the physiological laboratory can not be doubted. With the exception of two imperfect editions published in London, the works of Galen have never been published in English. One of his most famous maxims : "A man should always rise from the table before his appetite be fully satisfied."

71. What was the state of medicine when Galen died ?

At the death of Galen (the end of the 2d century) there began a period during which the art of medicine not only ceased to advance, but went backward, and became enveloped in the myth and ceremonies of the priesthood. For a while the schools of philosophy and medicine still existed at Alexandria, but in the year 372 the city was subjected to pillage and fire. The scholars were stripped of their elegant quarters, the buildings were completely destroyed, and the vast collection of manuscripts were used to heat the water in the public baths.

72. Who was Zeno, and give sketch of his pupils ?

After Constantine had declared Christianity the true religion, came Julian who attempted to overthrow its teachings and re-establish paganism. One of the first of his imperial acts was to endeavor to revive the ancient institutions of Alexandria. This mission was entrusted to a physician of Cyprus, named Zeno. He went thither, but most of the inhabitants were Christians, and instead of proclaiming his mission, he kept himself quiet, and being really an illustrious member of the medical profession, was soon able to surround himself with numerous disciples, among whom were Jonicus and Oribasius. Zeno left certain treatises, but they are lost. He is described as being the most famous teacher and practitioner of that time, though his fame seems to have originated in being able to have educated such illustrious pupils.

Jonicus, who was of Sardinian, was of medical parentage

and was very skillful. He acquired remarkable results in anatomical knowledge. So great was his knowledge of pharmacy that it was said that none of its secrets were withheld from him. He invented surgical ligatures and other useful appliances.

Magnus of Antioch was another of his (Zeno's) pupils, and was renowned for his medical accuracy and his contentious spirit. He doubted if physicians were altogether efficacious in curing maladies. In argument he is said to have closed the lips of all other medical professors. But the most renowned of all the pupils of Zeno was Oribasius. He was a native of Pergamos, and ranked with the philosophers of the time. It is said that he was an important factor in securing the throne for Julian. They had become close friends in early life, were of similar taste, and were both devoted to the ancient religion. He was by Julian made quaestor of Constantinople. In his capacity as a physician he followed Julian into Persia, and was with that emperor in his dying moments. After Julian's death his successor despoiled Oribasius of his property and banished him to a barbarous nation. His courage, his wonderful cures and eloquence so won the respect of that nation of savages that they wished to make of him a god. The fame of his homage reached the ears of the emperor who had succeeded Julian, and he was recalled, and his rank and honor restored. Eunapius, who was a contemporary physician, says that he was the wisest man of his time, the most skillful in medicine, and the most amiable in conversation. Being familiar with medical literature from the earliest times, he undertook at the request of Julian, to compile from all the medical authors every thing of value. This labor he accomplished in 72 books. Of all these about 20 have been preserved. While he quotes from all the authors, he is especially prolific in quotations from Galen. He prepared a synopsis of this

great medical cyclopædia for the use of his son, and also published several original works.

73. Who was Marcellus Empiricus ?

He was by birth a Gaul and a native of Bordeaux. He lived about the opening of the fifth century, and was physician to the Emperor Theodosius. In writing on medicine he evinced the most abject superstition. In a work entitled *De Medicamentis Physicis*, he was so much in accord with the wonder influence of the age, that he did not hesitate to avow medicinal properties to preternatural and magic formulæ. His *Pharmacopœia* is taken from the simple recipes of the peasants. He recommended an oriental formula for exorcising the diabolical principles of diseases, but laid especial stress on the use of Christian charms and formulas. He referred to a few Greek physicians in his writings, and to some of the old Latins, among whom were Pliny, Apuleius, Cornelius, Apollinaris and Designatianus. He makes no allusion to Galen.

74. What was the state of medical education in Athens at this time ?

Gregory, the bishop, tells us something of the state of things in Athens at this time. He says that there was much rivalry between the academies of that classical city. There was in most of the students assembled there a sophistic furor. Each student canvassed for his particular master and teacher. It was the custom not to attend different lectures at the same time, but for each student to select for himself a teacher, to whom he attached himself exclusively. By this recruiting for his master, the student who was successful got exemption from class payment, and in some cases received other payment when he succeeded in bringing a good supply of newcomers. A youth who entered Athens for the purpose of study was wrangled over much as travelers are in some countries at this day.

So it happened often that the luckless student did not succeed in placing himself under the master with whom he had intended to study. Recruiting was even carried on in other cities for the teachers of Athens. It was a time of loss of all scholarly dignity. Dunglison says of it : "The school of Alexandria still continued to cultivate medicine, shedding at long intervals some faint glimmerings of light. The Greeks, oppressed by the superstitious and intolerant Christians of this period, gave up medical instruction."

The school of Athens, once so celebrated, was trodden under foot by the orthodoxy of the Christian emperors of the East, and in the place of encouraging, they persecuted the pagan philosophers who taught medicine. Constantine, in the year 313, declared the Christian religion to be the faith of the Roman empire. This gave ascendancy to Christianity, but at the same time was injurious to the school of Alexandria.

Constantine had declared himself to be the enemy of worldly learning. It was not to be expected that physicians whose philosophical tendencies inclined them to the pagan party should longer be encouraged.

75. Why did the people believe in spiritual forces and miracles at this time?

Because the Christians had from the first turned to unseen powers for aid in trouble and sickness. It became an age of miracles; medicine was of the earth—earthly. The saints could do anything. Christ had come as a healer, he had cured the sick without the aid of medicine, and had left his divine power of curing the sick to his disciples, by whom it was transmitted to the elders and deacons of the churches of Christianity. There was laying on of hands, anointing with oil, prayers, incantations and belief in the relics of saints. The clergy assumed control of the body as well as of the soul. Faith was widespread in the potency of unseen spiritual forces, good and evil. The

assertions of the physicians that disease had a real cause were not listened to; all the years of experience of the old physicians, all the wisdom of Galen, all were forgotten and discarded.

76. Tell something about the hospitals and asylums founded by Helena.

With the clergy all powerful for the cure of the sick, by means of the good spirits and angels, there was no further use for the ancient temples of Æsculapius, or as they were called Asclepions, which were really hospitals. So Constantine caused them to be abolished. They were replaced by hospitals and asylums placed under the care of the church. These were richly endowed with lands and money.

The empress—mother of Constantine—Helena, was foremost in this charitable work, and was assisted by many high-born ladies. Orphan asylums, foundling homes and abodes were organized for the poor. There were also parabolani, out-door visitors to the sick poor, especially in time of pestilence. But noble as was this great charity of the church, it labored under the defect that in place of the skillful physicians of the Asclepions, they were now only well meaning but unskillful priests, who really knew nothing about disease. The sick were really under the care of nurses; and hence, to hide their inability and ignorance, these nurse priests proclaimed that prayer and relics of saints and other ceremonials were better for the cure of the sick than the skill of the earthly physician. Those having charge of the hospitals were called the Nosocomi.

77. What effect had the miracle cure on the science of medicine?

With the Asclepions closed, the schools of philosophy prohibited, learning branded as magic or punished as treason, philosophy driven into exile and as a class ex-

terminated, it soon became needful to fill this great void. Draper says: "The quackeries of miracle cure, shrine cure, and relic cure, were destined to eclipse the genius of Hippocrates. Never was a more disastrous policy adopted than the Byzantine suppression of profane learning. Many of the noblest of the philosophical and scientific works of antiquity disappeared from the languages in which they had been written, and were only recovered from translations which the Saracens had made into Arabic."

According to these bigoted ecclesiastics, no medical knowledge was necessary. Anatomy became obsolete, physiology fell into disrepute, and pathology was of no use. *Materia Medica* was considered worthless. All diseases, plagues and pestilences were regarded as providential visitations for some imaginary or real sin.

78. What relation had Nestorius to the introduction of medicine into Arabia?

In the 5th century, through a controversy of one Nestorius, bishop of Antioch, with the Roman church, medicine was introduced into Arabia, and to it the Mohammedans were indebted for their future attainments in literature, science and art. Pope Caestine assembled a synod, and Nestorius was ordered to recant or consider himself excommunicated. He resisted and excommunicated his rival Cyril. Then the emperor assembled a grand council at Ephesus. All the parties assembled, but through treachery and bribery the matter was decided against Nestorius. He was called a Judas and blasphemer. After he was deposed he withdrew to private life in his old monastery at Antioch, where he lived until the year 435, when the emperor ordered him banished to Petrae in Arabia. By a second banishment he was sent to Oasis, the city of the great oasis in upper Egypt, where he was living in 439. Invasions of the savage tribes caused him to take refuge in the Thebaid;

but the governor caused him to be taken thence to Elephantis, and from there he was driven to Panopolis.

His followers were also compelled to fly, and the school of the sect was established at Edessa in Mesopotamia. Edessa was the Athens of Syria. It became the home of many scholars. Many Greek and Latin works were translated into Syriac. This was the foundation of the Chaldean church. Here on the Euphrates learning once more found a home. A college and several schools were established.

The Nestorians were given free exercise of their religion, and they were entrusted with the education of the children of the great Mohammedan families. The public schools were placed under one of the sect, one John Masue. Thus under the tuition of these learned men the Arabian academies were furnished with translations of Greek authors, and vast libraries were collected in Asia. And through this connection with the Arabs, the Nestorians found a way to disseminate their doctrines over Asia and into Malabar and China. The Nestorians were the depositories of the old Greek medical knowledge. They revered the old names, and collected with great assiduity all the works on medical topics of all the former schools. Pupils hastened to their schools from all directions, and they were able to study practical medicine in a public hospital, probably the first institution of the kind.

Thus while Christendom banished her scholars, the infidels took them in and fostered them. And this was the commencement of the great school of the future at Bagdad.

79. Give sketch of Uranius, the Quack.

Freind, quoting from Agathias, tells us he was a Syrian by birth, and practiced at Constantinople in the sixth century. He wished to be deemed a philosopher, but as he spent most of the day in brawling in the public squares and the night at a club where he got very drunk, he had

no time for abstruse studies. So he proclaimed himself a skeptic, saying that as no one could possibly know anything whatever, he thought it would be a criminal waste of time to study anything which anybody had written about anything whatever. He knew of Aristotle, and yet loved to deride him. He loved the society of fools, to whom he loved to talk on the attributes of Deity and other lofty themes. In such company his verbiage passed for wit, and his discourse for wisdom. He was much invited to the entertainments of the great, who were sure of a good laugh at his tipsy fooleries, and who used to chastise him and turn him out of their houses when his merri-ment became offensive. When he accompanied the Persian embassy he fooled the Persian monarch Chosroes, who assembled all the Magi or wise men to confer with him on deep questions such as the eternity of matter, the existence of a first cause, etc., and in the discussion Uranius was declared victorious. Chosroes was so pleased with him as to present him with a cup, from which he drank at the table, and to style him master in after letters. He thus became very vain. Scott, who also quotes this, thinks that Uranius was a mix between Paracelsus and John Brown, neither of whom was fool or quack.

80. Who was Paulus Aegineta ?

An important physician. He was educated at Alexandria, and is supposed to have been a professor in that city at the time of its final subjugation by the Saracens in 640. He was distinguished as a surgeon and accoucheur. He wrote a summary of Greek medicine from Hippocrates onward. He also wrote a book on diseases of women, and he was so skilled in obstetrics that he was known as Paul the obstetrician. It is claimed that he was the first man-midwife. He was sent for by midwives from great distances. He was also a great traveler. He describes bronchotomy and other operations.

81. Give a description of the laws governing a medical education in the early centuries A. D.

Before the consolidation of the Roman empire in the year 31 B. C., there were no established medical laws. The Greek system of training seems to have been in vogue. Every one who was liberally educated was instructed in the philosophy of medicine which explains why all the philosophers of the old days were also to some extent teachers of medicine. But the physician was expected, in common with his medical knowledge, to be familiar with the grammar of his own language, with rhetoric, arithmetic, geometry, dialectics, moral philosophy, astronomy, and even architecture. Galen refers to all these branches of general education as being necessary to sharpen the intellect of the pupil, and to teach him to think. The time usually spent in the medical course, after that of the literary course, was not less than five years. Galen, after a philosophical course of three years, which he began at fourteen, became a student of medicine for three years at the school of Pergamos. Then at twenty-one years of age he went to Smyrna, thence to Corinth, then to Alexandria and to other cities, and he was twenty-eight when he commenced practice at Pergamos.

The instruction in the Roman schools was mostly practical. Anatomy, at least the dissection of the lower animals was enjoined.

Galen insists upon its importance. The student of those days had no books. Books were scarce, and when he could gain access to some portion of the writings of Hippocrates, and of Celsus, or of Caelius Aurelianus, he was required to ponder over them, and listen to the notes or oral explanations of his preceptor. The temples of the Asclepions were open to him. And after Constantine had closed them, the student could with his preceptor visit the sick and profit by clinical instruction. The stu-

dent who went to Rome in the year 370 A. D., was required to furnish the city magistrate with a paper or passport from the governor of his native province, stating age, name, and rank in life.

He must on arrival declare the course which he intends to pursue, must tell the magistrate his place of abode in the city.

The city authorities held him in the strictest supervision as regards to his conduct in the public assemblies of the students, and in his private life and associations. He must not often attend the public spectacles, and must give way to no riotous feasting at irregular hours.

If he conducted himself unbecomingly he was liable to be publicly whipped and expelled from the city, and sent to his home.

Those who devoted themselves to their studies were allowed to remain until they were twenty years of age, when if they did not voluntarily return home they were forced to do so. Tables were furnished monthly to his native province, and annually to the central government, regarding each student, so that the emperor might select from those who had finished their education such as he might desire for the public service.

82. Describe the customs of the physicians of this time.

The rush to the medical profession was great, all sorts and conditions of men wished to become doctors. In Galen's day many so-called physicians could not even read correctly. And the ancient writers seemed to think that there were a great many more than necessary. So fashionable were consultations that Strabo, of the first Christian century, says that the emperor Hadrian asserted that when he was ill so many physicians were called in council it contributed to his ruin. We may form some idea of the state of medicine in ancient Rome at this time by what Galen, disgusted with his brother physicians,

said : " There is no distinction between robbers and physicians, except that the former commit their misdeeds in the mountains, the latter in Rome." At Rome many physicians were also slaves, but when they practiced were usually declared freedmen by their masters. The Roman physician was an all round practitioner, and not like the Egyptian devoted to specialties.

83. What was the state of medicine among the Jews in the early centuries of the Christian era ?

In philosophy the Jews had gradually been emancipating themselves from their earlier traditions. After the destruction of Jerusalem, all Syria was full of Jewish schools, but the great philosophers of the Jewish nation were residents of Alexandria. The physicians in this exercise of free thought took the lead. For some time the Levite priests, whose manner of healing was by prayer, expiatory sacrifices, and miracles, opposed the physicians, and sought to keep medicine in their own hands. The Jewish physicians enriched the art of medicine with many important discoveries, reported by ancient authors. Celsus refers to two medicines of the Jewish physicians, both plasters. One for fracture was composed of salt, scales of red copper, amoniacum, thyme, soot of frankincense, dry resin, calophonian resin, wax, veal suet, vinegar, and oil. The other is a composition of two parts lime, and a pound of reddest nitre, mixed with the urine of a young boy.

84. What is the Talmud, and give its origin ?

The Talmud is a collection of traditions, illustrative of Jewish laws and usages, forming twelve folio volumes. Its origin is as follows: The civil constitution, methods of thought and language of the Jews had undergone a revolution, and in the time of the Saviour were very different from what they had been in earlier periods.

The Mosaic books contained rules no longer adapted to

the situation of the nation, and its new political relations. The rabbis undertook to supply the defect, partly by commentaries on the old Mosaic precepts, and by the addition of new laws. These comments were called the oral traditions. Rabbi Jehuda was the editor of the collection; at first the Jews had hesitated about making even written explanations and comments upon the revered text of the old testament, fearing it would degrade the Sacred Scriptures from their exalted rank.

But about the year 150 A. D. it was done, and this collection of what previously to that time had been oral transmission of interpreted law, was given the name of Mishna, or the second law.

The later Rabbis busied themselves upon commentaries and additions to the Mishna. Among these works one by the Rabbi Jochanan, composed in 230, acquired the most celebrity, and was called the Gemara or the completion. The Mishna and the Gemara formed the Jerusalem Talmud, and related to the Jews in Palestine. But after the Jews had mostly removed to Babylon, and the synagogues of Palestine had disappeared, the Babylonian rabbis composed new commentaries on the Mishna, which, about 500 A. D. were completed and formed the Babylonian Talmud. The Talmud contains many observations on medical subjects; it is from that ancient and romantic book that we gather our knowledge of the physicians of that time. Febrile movements were the effort of nature to expel morbid matter. Paralysis of the hind legs of an animal is referred to a tumor on the spinal cord. The best remedy for nausea is an emetic. Sudden change of diet is injurious. Milk fresh from the udder is best. A person should take more solid food than liquid before forty, after that more liquid than solid. A little bread and wine taken fasting preserved the liver from 63 diseases. When one dreams of a cock, it is a sign of plethora. Carmoly

quotes from the Talmud as follows : “ Any disease, provided the bowels remain open; any pain, provided the heart remain unaffected; any kind of uneasiness, provided the head is not attacked; all manner of evils, *except it be a bad woman.*”

85. When and where was the city of Bagdad founded, and what relation had it to the advancement of medicine ?

In 762 the caliph Almanzor founded the city of Bagdad, and established a college there. All the scholars rejoiced, and dreamed of a new Alexandria. Bagdad, the home of the caliphs, the city of the Arabian Nights, city of magnificence, and capital of the Saracens, was situated on the west bank of the Tigris river. In the old days its population was about 2,000,000. It is said that the caliph Almanzor was attacked by a dangerous disease, and sent for a physician who had been of the Nestorian school. Being restored to health by this physician, the caliph learned the value of the healing art, and became a patron of knowledge. Almanzor now made his new and beautiful city the home of the arts and sciences. He invited all the philosophers to visit him, no matter of what religion. It was not long before the cultivators of mathematics, astronomy, medicine and general literature abounded at the court of Almanzor. A medical college was established ; there were public hospitals and laboratories for the benefit of students. So great was the culture of the medical faculty that power was given to it to examine all persons who intended to devote themselves to the study of medicine. So great was the number of professors and students who flocked to that centre of learning that at one time it contained six thousand professors and students. Almanzor enriched his new city with a great number of works on medicine, astronomy and philosophy, which he caused to be translated from the Greek. He had the works of Aristotle, Galen and Ptolemy

translated, and these labors were continued by his successors.

The school of Bagdad soon became celebrated. Almanzor was succeeded by Haroun Al Raschid, who began to reign in 792. He erected many domed and minareted mosques, increased the number of hospitals and colleges, and established public schools for the education of the people. He summoned to his court from all over the world poets and learned men. So much did he favor physicians that he founded the city Tauris as a memorial of a cure performed on his wife.

No mosque could be built without a school attached to it. When he traveled he had a retinue of 100 learned men.

86. What was the state of medicine in Spain at this time ?

Spain, at this time under Saracen rule, was cultivating knowledge. Abderaham was the Saracen ruler, and under him the Spanish Arabs ascended to the highest point of scholastic learning. He also established works in the cities of great sanitary value. In the year 939, the savants of Cordova assembled regularly under the presidency of a *cadi*, for the discussion of scientific questions, and in this discussion the nobility and royal princes participated. At the houses of Wazir Iza ben Ishor and Caliph ben Zahrawi, both celebrated as medical authors, stated conclaves were held for scholars famous for their physical and astronomical learning. These physicians were the surgeons to the Saracen monarch. When they had leisure moments they made rare collections of curious works of science and art, which were sometimes important enough to gain mention by the Arabian annalists.

Nor was the culture confined to the men, for there were also Saracen women who excelled in poetry and literature. There were many noble dames at the Saracen court at Cordova who were polished scholars. Although in

defiance to the law of secluded life for the Mohammedan women, the Saracen women obtained the honors of public recognition as a merited distinction for their poems and the beauty of their written prose. In the tenth and eleventh centuries the fame of the school of Cordova had spread throughout the whole world, and attracted students of the sciences from Africa, Syria, Persia, and from France and the Roman provinces of the West of Europe. So late as the year 1051 the governor of Almeria called together a congress of the most celebrated and learned men from the Orient, Spain, and Europe, and devoted some weeks to scholarly discussions. The hospitals and orphanages of Cordova also became celebrated. Al-Hakim, the ruler, was often seen in the hospitals and dispensaries, inspecting the condition of diseased and infirm patients and directing to them his own physicians. Early in the 11th century Mussulman Spain was noted for its regulations touching medical science and practice. This was in the reign of Gehwar, and he caused all the medical charlatans and ambulatory physicians, and all who had no real knowledge of medical science, to be expelled from the towns. He decreed that a college of skilled physicians should be organized for the purpose of examining the qualifications of those demanding license to practice in the rural places or wishing professional employment as physicians in the many hospitals in the Mohammedan domains. In the 10th century not less than 27 free schools were opened in Cordova for the education of the poor, and in the mosques there were lectures on scientific subjects. Al-Hakim established at Cordova an academy which for several hundred years was the most celebrated in the world. Already in the 10th century it had a library of 224,000 volumes. There were also renowned schools at Seville, Toledo, Saragossa, Murcia, and Coimbra. While Spain was subject to the Moors, Cordova produced 150 authors on medical

subjects, Almenik, 52, and Murcia, 62. While there were books published on medicine, anatomy was rigorously forbidden by the dogmas of their religion.

87. What was the position of the Jews among the Saracens ?

In the wise method of the Saracens, there was no distinction between Jew and Christian. Hence we find both nations represented among the scholars of Bagdad.

88. Give the names of some of the most celebrated Jewish physicians of Bagdad.

Maser Djawah Ebn Djeldjal, of Basra. A very talented man, a poet, judicious critic, profound philosopher and physician. By some it is said that he and not Rhazes first mentions small-pox.

Isaac ben Emran was of the school of Bagdad. He was born at Damascus, and came at an early age to Bagdad to study medicine, and made there such progress that Zaid, an African Emir of Kairouan, the chief city of the Arabs in Barbary, gave him his full confidence and appointed him his physician.

Joshua Ben Num, surnamed Rabbi of Seleucia. He was a professor of the Bagdad school of medicine. But little is known of his life, except that at the beginning of the ninth century he enjoyed great celebrity at Bagdad both as a practitioner and as an excellent theorist.

89. What relation does Alchemy bear to modern Chemistry ?

The Arabs thought by the power of fire to so act on baser mixtures as to produce gold; by purging away the dross, by imitating the mysterious forces of nature, to cause gold, the royal metal, to rise phoenix-like from the flames into which the mercury and other substances had been cast. While the Arabs were hunting after the gold supposed to be hidden in baser metals, their medical tendencies led them to cultivate another delusion of the ancients, the discovery of the Elixir Vitae, or the liquid

which would cure all diseases and enable men to live forever. Gold it was thought might contain this marvellous fluid. So efforts were made to make drinkable or liquid gold, for then they thought the immortal could be attained on earth. So they turned their attention to water; natural waters containing minerals could affect the health, and artificial waters could be made; in former times the operation of distilling water to purify water had been described. The apparatus for doing so was called by the Arabs an alchemic. The Arabs had not long followed these pursuits before important results were obtained. The discovery of the strong acids laid the foundation of chemistry; the invention of gunpowder revolutionized the world. There were also several explosive mixtures. Automatic fire was made from equal parts of sulphur, saltpetre and sulphide of antimony, finely pulverized and mixed into a paste with equal parts of the juice of the black sycamore and liquid asphaltum with a little addition of quicklime. This was to be kept from the rays of the sun, which would set it afire. The liquid fire of the Greeks is a secret still. It was a state secret of Constantinople. Though the alchemists did not discover eternal life or liquid gold, yet they did discover . . . gunpowder, nitric acid, aqua regia, sulphuric acid, phosphorus and alcohol. They also originated many expressions which are in use at this day, such as water-bath, filtration, distillation, and sublimation. Alchemy then was the mother of chemistry. But it must not be thought that alchemy originated with the Arabs. Alchemy flourished at a very early period in Egypt.

Without some knowledge of chemistry the old Egyptians could not have excelled in some of the arts and sciences as they did, such as the making of glass, of linen, and of dyeing. Their manufacture of metals also shows knowledge of metallurgy. Their embalming displays chemical knowledge. One of their papyri was found to treat of magical

operations, and contained one hundred chemical and alchemical formulæ.

Thus, in a word, while the Saracens were not the originators of alchemy and her daughter chemistry, yet they developed what was a then disused science, and from it also laid the foundation for the future of chemical discovery. In seeking to convert other metals into gold and silver, they did produce a finer transmutation for which men must thank them. In seeking to find an universal panacea against disease, they did find many useful articles to be used by future generations of men as medicines.

Who was Rhazes ?

Abu Beer Mohammed Ibn Zacariya Ar-Razi, commonly called Rhazes, was a very distinguished physician in the days of Bagdad. He was born in a town near Khorasan in Persia, then a province of Bagdad. The name of this town is Rai, and it is from this that his last name was derived—Ar-Razi. The exact year of his birth is unknown; Fisher says about the middle of the 9th century. In his youth he played on the lute and cultivated music, but when he grew up he renounced these things, saying that music proceeding from a moustache and a beard had no charms to recommend it. He then began the study of medicine and philosophy, reading very patiently the works on these subjects to which he had access. He then began to attend the sick and composed a great number of books on medicine. According to one historian he was more than forty years of age when he started to study medicine. He traveled extensively into Jerusalem, Syria, Egypt, Persia, and Spain, the better to perfect his knowledge by conversing with botanists, oculists and surgeons. Having thus become master of his profession, he settled in Bagdad, and so great was his learning that he was selected from over a hundred eminent competitors as the director-in-chief of the grand hospital in that place. He is said to have

been the ablest physician of his age; a master of all kinds of learning; skilled both in the theory and practice of medicine. So great was his renown that pupils traveled from great distances to hear him. He was often called to distant parts of the country to attend princes. He was of studious and quiet habits and very generous in disposition; so that while he frequently relieved the wants of his poorer patients, he himself died in poverty. He had attained his 80th year when he lost his sight from cataract. He died in 932 or 933. It is said that he wrote 226 books. He wrote on philosophy, medicine, history and chemistry. The greater part of his works are now lost. An important book is the treatise on small-pox and measles. It has been thought that he was the first to describe these diseases. This book was published in English by the Sydenham Society in 1848.

Some of the wise sayings of this remarkable man have been perpetuated by his biographers—such as: “When you can cure by regimen, avoid having recourse to medicine.” “When you can effect a cure by a simple medicine, avoid a compound one.” “With a learned physician and an obedient patient, sickness soon disappears.” “Treat an incipient malady with remedies that will not prostrate the strength.”

91. What relation had Rhazes to the employment of chemical preparations in the treatment of disease?

To Rhazes is ascribed the first employment of chemical preparations in disease. He mentions corrosive sublimate, mercurial ointment, various preparations of arsenic, the sulphates of copper and iron, saltpetre and borax. He first describes the preparation of and properties of sulphuric acid, obtaining it by distillation of the dried green vitriol.

92. Who was Ali Abbas? (Haly Abbas.)

He was the medical historian of the Arabians. He was

a Persian, and was born about 930. He passed the most of his life at Bagdad, and died in the year 994, his exact age being unknown. His reputation for learning was so great that he was named the sage, and so almost supernatural were his powers and skill in healing that he was also called the magician. It is who left us the fullest account of the condition of medicine among the Arabians, and the names of their medical writers. His great book on medical matters is called the *Almaleki*, or the royal book. He intended it to be a complete work on theory and practice, and hence he called it the whole book of medicine, or the *Liber totius medicinæ*.

93. Who was Avicenna ?

Abu Ali El-Hosein Ibn Abdallah Ibn Sina, now known as Avicenna, was born about 980 at Alfshena, one of the many hamlets in the district of Bokhara. His mother was a native of the place; his father, a Persian from Balkh, filled the post of tax collector in the neighboring town of Harmaitin, under Nuh Ibn Mansir, the Emir of Bokhara.

On the birth of Avicenna's brother the family migrated to the capital, then one of the chief cities of the Moslem world, and famous, as we have already seen, for its culture. Avicenna was put in charge of a tutor, and his precocity soon made him the marvel of his neighbors—as a boy of ten who knew by rote the Koran and much Arabic poetry besides.

He learned arithmetic from a greengrocer ; and higher branches were begun under one of those wandering scholars who gained a livelihood by cures for the sick and lessons for the young. But the pupil soon found the teacher to be but a charlatan, and began, aided by commentaries, to study logic, geometry and the *Almagest*. Before he was sixteen he not merely knew medical theory, but by gratuitous attendance on the sick had, according

to his own account, discovered new methods of treatment. By the end of his seventeenth year he had gone the round of learning of his time; his apprenticeship of study was concluded, and he went forth to find a market for his accomplishments.

His first appointment was that as physician to the Emir, who had heard of the youthful prodigy and who owed him his recovery from a severe illness. He now assisted his father in his financial labors, but still found time to write some of his earliest works for two wealthy patrons, whose property they became. Among them was the *Collectio*, a short synopsis of knowledge of which Avicenna wrote many for his patrons. When he was twenty-two years of age his father died. The reigning dynasty came to an end in the year 1004, soon after. Mahommed of Ghazni sought to attach the brilliant scholar to his retinue of learned followers, but he declined the honor, and made his way westward to the city of Urdjensh, in the modern district of Khiva, where the Vizier, who was a friend of scholars, gave him a small monthly stipend. But the pay was small, and Avicenna wandered from place to place through the districts of Nishapur and Mero to the borders of Khorasan, seeking an opportunity for his talents. Finally at Jorjan, near the Caspian, he met a friend who bought near his own house a dwelling in which Avicenna lectured on logic and astronomy. For this patron several treatises were written; and the commencement of his great Canon of Medicine dates from his stay in Hyrcania. He afterward settled in Rai, in the vicinity of the modern Teheran, where a son of the last Emir Medji Addaula was nominal ruler, under the regency of his mother. Here about thirty of his shorter works were written. But the warlike feuds compelled the scholar to quit the place, and after a brief sojourn at Kassoin, he went southward to Hamadan, where the prince was established. He first

entered the services of a high-born lady, but the Emir learned of his arrival, called him in as a medical attendant, and sent him back with presents to his dwelling. He was now raised to the office of Vizier, but the turbulent soldiery mutined against their young sovereign, and demanded that his new Vizier should be put to death. Shems Addula consented that he should be banished from the country. Avicenna remained hidden for forty days in a sheikh's house till a fresh attack of illness caused the Emir to again send for his physician. Even during this troublesome time he continued to study and teach. Every evening extracts from his great works, the Canon and the Senatio, were dictated and explained to his pupils; among whom, when the lesson was over, he spent the rest of the night in festive enjoyment with a band of singers and players.

On the death of the Emir, Avicenna ceased to be Vizier, and hid himself in the house of an apothecary, where, with intense assiduity, he continued the composition of his works. Meanwhile he had written to Abujaafar, the prefect of Ispahan, offering his services; but the new Emir of Hamadan, hearing of his correspondence, and discovering the place of his concealment, imprisoned him in a fortress. War continued between the rulers of Ispahan and Hamadan. In 1024 the former captured Hamadan and its towns, and expelled the Turks. Avicenna, after the war, returned with the Emir to Hamadan, and carried on his literary labors; but at length, accompanied by his brother, a favorite pupil, and two slaves, he made his escape from the city in the disguise of a Sufite ascetic.

After a perilous journey they reached Ispahan, and received an honorable welcome from the prince. The remaining ten or twelve years of his life he spent in the service of his patron Abu Jaafar Ala Addaula, whom he had accompanied as physician and general literary and

scientific adviser, even in his numerous campaigns. During these years he began to study literary matters and philosophy. But amidst all his study Avicenna never forgot his love of enjoyment. Unusual bodily vigor enabled him to combine severe devotion to work with indulgence in sensual pleasures. His passion for wine and women was almost as well known as his learning. But his bouts of pleasure gradually weakened his constitution; a severe colic which seized him on the march of the army against Hamadan was checked by measures so violent that Avicenna could hardly stand. On a similar occasion the disease returned; with difficulty he reached Hamadan, where, finding the disease gradually gaining ground, he refused to keep up the regimen imposed, and resigned himself to his fate. On his death-bed remorse seized him; he bestowed his goods on the poor, restored unjust gains, freed his slaves, and every third day till his death listened to the reading of the Koran. He died in June, 1037, in his 58th year, and was buried among the palm trees by the Kiblah of Hamadan.

While Avicenna takes high rank among the Moslems as a philosopher, his renown as a physician is much higher. His system is, as might be expected, a codification of Aristotle with certain Neo-Platonist complications.

Dr. Fisher says that the causes are not well understood which determine the extraordinary popularity of the medical and surgical writings of Avicenna, particularly from the 12th to the 17th century, during which long period they were the guide of medical study in the European universities, and almost eclipsed the names of Rhazes, Haly Abbas, and Avenzoar. His medicine is the medicine of Galen, and through Galen of Hippocrates, with much of the philosophy of Aristotle. The Canon of Avicenna has more logic than the Continens of Rhazes. The great work of Avicenna is his Canon of Medicine. It includes five

books. The first and second treat of physiology, pathology and hygiene; the third and fourth treat of the methods of treating disease; the fifth treats of the composition and preparation of remedies. This part contains some personal observations. Up to the year 1650 this Canon was still used as the text-book in the great universities of Louvain and Montpellier.

While he described some surgical operations, yet his surgery is from Paulus Ægineta, Rhazes, Hippocrates and Galen. He used the actual cautery quite frequently, he believed in bleeding and cupping.

It would seem by Avicenna's writings that the use of forceps in obstetrics was known to the Arabian physicians.

There is a great diversity of opinion as to this man, among medical writers of the past. Some Spanish writers maintain that the Canon was not his at all, but the work of thirty philosophers and physicians.

94. What was the state of medicine about the 11th century?

In the year 1055 the Turks pillaged Bagdad, and the reigning Caliph gave up all his power to Togrul Bey. The Turk Emir al Omra was given military command. The Caliph only was permitted spiritual leadership over orthodox Mussulmen. Thirty years later his son, Malek Shah, made Ispahan his capital, and governed Asia from China to Constantinople. We now see a gradual decadence of science and letters among the Arabians. The Turkish races, with their ignorance and opposition to improvements, were gradually gaining ascendancy. In the middle of the 12th century, the library of philosophical books at Bagdad was burned by order of the Caliph, and in the year 1192, at the same place, the books of a physician were publicly cursed, and then committed to the flames, the owner being cast into prison.

The age of reason was passing away, and the age of fanaticism was approaching. In Spain it was the same way. Al Hakem II. (961–976) had been a patron of the arts and sciences. His successor ordered the doctors of the sacred law to examine the royal library, and every book treating of philosophy, astronomy, and other forbidden topics, was condemned to be burnt. In 1195 the son of the great patron of scholars—Almansur—condemned the philosopher Ben Habib to death for philosophizing, and ordered all books on philosophy and other kindred subjects to be burned.

There were however at this period certain very learned and celebrated philosophers and physicians, viz., Albucasis, Avenzoar, Averrohoes, and the botanist Ebn Beithas.

95. Who was Albucasis?

Abul Casem Chalef Ebn-Abbas Alzaharivi. Of his personal history nothing is known, except that he was a man of noble mind as a practitioner, and possessed a liberal, dignified and enlightened spirit, and gained the respect and love of his fellow countrymen. He is now considered to have been the most eminent of all the Arabian surgical writers. He wrote a very celebrated work on the operations of surgery, also a work on the art of healing. This last was a synopsis of the medical practice of the day, and was made up of quotations from previous medical writers. But the work on surgery is his most important work. At the time of Albucasis surgery was almost a lost art among the Arabs.

Albucasis nowhere mentions dissection, and falls back on Galen. The Mohammedans thought it defilement to touch the dead body, and there do not seem to have been any practical anatomical studies among their physicians. His surgery is divided into three books. The first relates to the many uses of the cautery. The second book is of the operations with cutting instruments. He describes and

gives pictures of numerous instruments, and tells how to perform ninety-seven operations with the knife. The third book is devoted to fractures and dislocations. This is the first work that has given us pictures of the ancient surgical instruments. He first describes the operation for the removal of stone from the female bladder, but this had to be performed by wise women, as a man was not allowed to look at the genitals of a woman.

96. Who was Avenzoar ?

Abou Merwan ben Ardel Melek ben Zohr was of Andalusia, and lived in the magnificent capital, Seville. He was born near Seville, about 1070. He was said to have been the most renowned physician and surgeon after the learned Avicenna. His father and grandfather were renowned physicians, and from them he inherited his medical knowledge and skill. His son was a physician after him. Avenzoar began the study of medicine at an early age, his father, Abd-el-Melek beginning to teach him when he was ten years old. When he had finished his course in Seville, his father bound him by an oath never to administer poisons. In that day poisoning was among the Saracens a fine art, and would have delighted a De Quincey. He was a very learned man. He was an accomplished scholar and linguist, being familiar with Hebrew, Syriac and the Arabic languages. His reputation extended over the whole land, and he was in correspondence with the most celebrated physicians of his time, by whom he was considered to be a second Hippocrates. He was also known as a philosopher and poet. He was physician to Ali ben Temin, king of Seville. He performed a brilliant cure on the brother of the king, who was count of the royal stables. As a reward, he was cast into prison, where he remained until released by Joseph ben Tachefyn, prince of Morocco, who drove Ali, with a horde of other small tyrants, out of Spain.

Joseph, the Moor, took the physician into his service and conferred upon him riches and honors. He was appointed a professor in medicine and long taught the science with success, and largely contributed to the dissemination of a more enlightened and rational system of physic than had been known to the Arabian physicians, who had so long been but imitators of the older Greek physicians. Avenzoar was of noble descent, and was also of excellent fortune, so that he was not obliged to practice his profession for the purposes of gain alone, but could practice from a real love of the science and art of healing, and a wish to benefit the community in which he lived. So he gave his services gratuitously to people of small fortune, and never took a fee from the poor. He was thus a charitable and greatly esteemed person in his adopted city. The principal work on medicine written by Avenzoar which has come down to us was entitled *Teissir*, or *The Introduction*. This work treats of the remedies and diet for most of the diseases which were then known. From it we learn that Avenzoar at one time had charge of a hospital. Another book was the *Antidotarium*, containing the methods of preparing medicines and diet.

Fisher thinks that Avenzoar, with the other medical writers of Spain, was unacquainted with the medical works of the Asiatic Arabian authors. There was great faction and hatred between them, and they never quoted from each other. Avenzoar was a Galenist. His admiration for Galen was unbounded and he adopted his system. He was of the rational rather than the dogmatic school. He was opposed to quackery, did not believe in the superstitions of astrology, and sought not old wives' tales. And yet with all his freedom from the fancies of his time, he did believe in charms and amulets.

Avenzoar gave his time to the study of medicine,

pharmacy and surgery. He apologizes for studying the two latter, contrary to the customs of the country and the example of his father. In that day surgery and pharmacy were considered inferior to medicine. Manual operations were performed by the servants of the physicians, who were the Medici Honorati and nobles. He was correct in fractures and dislocations, and by some was thought to have engaged in dissections. Avenzoar died at the age of ninety-two.

97. Describe the Bezoar Stone.

First mentioned by Avenzoar. A calculus or concretion found in the bodies of certain ruminant animals in the gall bladder, intestines, pineal gland, etc. It was considered an antidote against poisons, and as a remedy for many diseases long after Avenzoar's time. Avenzoar thus describes its origin and its virtues: "That is the best which is found in the East near the eyes of stags. Great stags in these countries eat serpents to make them strong; and before they have received any hurt from them run to the streams of water and go into it so far until it comes up to their heads; this custom they have from natural instinct, and there they continue without tasting the water (for if they should drink they would die immediately) till their eyes begin to trickle; this liquor which there oozes out under the eyelids, thickens and coagulates and continues running till it increases to the size of a chestnut or a nut. When these stags find the force of the poison spent, they come out of the water and return to their usual haunts; and this substance by degrees growing as hard as stone, at last by frequent rubbing falls off. This is the most useful bezoar of all." Serapion says that it is so precious and valuable that a palace at Cordova was given for one of these stones. It was believed that no poison, no eruptive pestilential or putrid disease, could resist its influence.

98. Who was Averrhoes ?

Abul Walid Mahommed Ibn Achmed Ibn Mohammed Ibn Roschd, called Averrhoes, the kadi, was born in Cordova, Spain, in the year 1126, and died in the year 1198, in Morocco. His father united the offices of high priest and supreme judge. In his early life he mastered theology, jurisprudence, mathematics, medicine and philosophy. His life occurred at the time of disaster to Mohammedan Spain. Almost every city had its petty king, and the Christian princes swept the land in constant inroads. In the latter part of his life the Moslems again became united. Averrhoes was made kadi to Seville, in 1169, and the next twenty-five years of his life was passed in similar appointments. During this time he lived at Seville, Cordova, and Morocco, following the court of Jusuf Almansur, who took pleasure in engaging him in discussions on the theories of philosophy and their relation to Islamism.

This liberty of opinion was confined to the wealthy and learned, and the common people were full of bigotry and hatred to any one who questioned the sacredness of the Koran. The freedom of some of his remarks gave offense to some of the orthodox faithful. He said, among other things, that he preferred Aristotle to the Prophet, and in some of his writings even attacked the Caliph himself. He was now stripped of his honors and banished into Spain to a place near Cordova, where he was assisted by his scholar, Maimonides, but he was so persecuted there that he was again obliged to flee, this time to Fez. Here he was condemned by a spiritual court to recant and undergo penance. Upon this he returned to his own country, where the Caliph Almansur restored him to his dignity. He died about 1198-99, about the same time as the Caliph. With the death of Almansur the political power of the Moslems in Spain ceased, as did the culture of the liberal sciences.

Averrhoes regarded Aristotle with great reverence and made it his chosen task to expound his writings. Rejected by the Moslems in this return to the old pure philosophy, he was accepted by the Jews, who had by Maimonides been taught to understand its beauty and usefulness. His writings became at a later time the text-books of the Jews, Levi ben Gerson at Perpignan and of Moses at Norbonne. His principal work was a compendium of physic, known as the Colliget, or Universal. He was also called the interpreter of Aristotle. He wrote many other treatises on medicine, philosophy, theology and jurisprudence.

In the next four hundred years Averrhoes had many followers among those who deified logic and science at the expense of faith. Paris became the centre of such a society. At Oxford, Averrhoes was held to be a commentator. In the days of Roger Bacon, in the 13th century, he became an authority. Bacon placed him beside Aristotle and Avicenna. But in the eyes of the Dominican school of Christian monks, he was considered to be the arch enemy of truth. His name became the badge of the scoffer and the skeptic.

99. Who was Ebn Beithar ?

Abdallah Ben Achmed Dhiaeddin of Malaga, known as Ebn Beithar, was a celebrated botanist of the 12th to the middle of the 13th century. He died about 1248 A. D. He wrote an important book on Botany, which was published in Arabic.

100. Of what service was Arabian medicine to modern medicine ?

Baas writes of Arabian medicine as follows:

1. It cultivated the study of the Greeks and made them accessible to the West, until, through the revival of learning, the Greek writers could be once more studied in the original. This transfer of Greek science, including medicine, to the West was accomplished through Spain and

Italy, and as early as the age of Charlemagne, though it became more marked in the following centuries. By it the Arabians gained great importance in the intellectual development of the West, particularly in its medical culture.

2. It introduced a great number of new and active remedies from the vegetable kingdom, and especially from the department of chemistry, and brought to light the pharmacies, as an advance in practice.

3. It contributed directly to the reform of practical medicine by the exhibition of the chemical remedies, and indirectly by the union of the natural sciences with medicine, which had its origin with them.

4. It first entered upon the clinical method of instruction, though it made little progress.

5. It preserved lay medicine at a time when, as in the West, priests and monks only, in Christian ignorance, treated the sick with supernatural and superstitious remedies—a period which, without the Arabians, would have lasted at least longer than it actually did.

101. Has Arabian medicine advanced any?

In 1857, Dr. R. Gutzlaff Barclay, writing for the *North American Medico-Chirurgical Journal*, gives some facts about the state of medicine in Arabia at that time. He says that there has been little progress in medicine in nearly a thousand years. The frequent ablutions ordered by Mohammed have much influence in keeping the people healthy, and the diseases also are substantially the same as in the days of Moses and of Ahrun, the priest of Alexandria. The diseases of most frequent occurrence at Jerusalem are ophthalmic diseases, intermittent, remittent, continued and Syrian fevers, hypertrophy of the spleen, dropsies, hernias, skin diseases, tape-worms, hepatitis. For the relief of liver troubles copious draughts of human urine are prescribed. For intermittent fever the inhalation of fumes of burning scorpions is recommended.

The people love physic. For rheumatic pains in the legs the patient is severely flogged several times a day over the shoulders. Small-pox is thus treated by the native physicians: Nothing is done for a week, but on the seventh day a gargle of white lamb's urine is ordered, and if there is any eruption on or about the eyes, they are to be washed with the urine. From the seventh day a strong gargle of aloes is daily used for forty days.

An educated Arab physician in his autobiography thus characterizes the state of medicine in his own country in 1857, and it is not much improved to the present day. He says: "The medical staff in this country is not the brilliant one of the Arabian age that has passed by. It may be divided into four classes, first, those who belong to it by descent, and, together with the honor inherited from their fathers, remnants of Arabic manuscripts, recipes from old, and from the works of Avicenan, they make a livelihood; give cooling drinks made from certain herbs, feel the pulse, carry smelling bottles under their belts, and a stick with a silver top, and look very dignified.

"The second class are the masters of families, who give barley water for fevers, broken bones and every complaint.

"The third class are the barbers, who are dashing practitioners, bleed in every case, put on plasters, never operate, and let the poor patient struggle on under the bleeding system.

"The fourth class are those who cure with charms and superstition. For example, if the poor man has the ague they order him to be laid near the tomb of some saint belonging to his creed.

"The Arabs are very superstitious. The touch of a crazy man is thought to be effectual for the cure of all sorts of diseases. Such poor unfortunates are held in high esteem. (Mohammed taught in the Koran that the insane must not be injured, and made severe penalties.)

“Amulets of precious stones, gold cases containing sentences from the Koran, are almost universally worn. Written prescriptions are frequently eaten as well as smoked for disease. The higher class of physicians frequently resort to incantations and tractions. They will not take medicine during the sacred month of Ramadan. The use of cathartics and enemias is common. Diaphoretics are ordered for almost every affection. Salivation is a favorite remedy, though they generally produce it by inhaling the vapor of native red cinnabar thrown on burning coals. Blood-letting is very fashionable.

“The Turkish women marry very young, are prolific, and have no trouble in confinement. The female attendant, when there is one, seldom examines per vaginam, or assists in labor. Peasant women are delivered sitting on a step, stone, or some low seat. One holds the woman while another squats with a cloth to catch the child. For tardy delivery of the placenta the woman blows in the hands; if this fails, she puts her feet in cold water. A little blue bead is worn during gestation to prevent after-pains. The child is heralded into the world, and the person who first shouts to the father that he has a child receives a present from the overjoyed parent.”

Thus we see that the Arabian era of learning from 700 to about 1200 served to preserve the wisdom of the ancients from loss to the world. This done, the power of the Saracen departed. Since then Arabia has been in mental darkness and superstition.

102. What was the state of medicine among the ancient Germans?

The Alemanni and the Franks had among them many Roman customs. Chilperic, a Frankish king, had his archiater or physician in ordinary, named Peter, in the 6th century. Theodoric had a physician who tells of having made an incision into the testicles of a boy for hernial tumor, and thus saved his life. Dagobert, king of the

Alemanni, a name given to the military confederacy of several German tribes, in the year 632 promulgated certain laws which were known as the Alemannic code. It recognized doctors as persons of distinction and entitled to recognition for their profession.

Physicians were also employed in medico-legal duties, and mention is made of the fee to the physician for determining the penalty for bodily injuries. That these physicians did not belong to the class of the learned, which only included those who had been educated in the monastic schools, is evident from the Langobard Code. This ordains that whosoever has inflicted wounds upon any one, he shall supply him with attendance, and likewise pay the fee of the physician, at a rate to be estimated by learned men. The physician could be present in the court in a professional character, but the learned fixed the damages.

No physician could bleed a woman in the absence of her husband or other relatives; if he did, he must pay a fine of 10 solidi. The servant who became too familiar with the maid of another was castrated.

In all these codes carnal offenses were very severely punished. Whoever touched the hand, arm, or breast of a maiden was fined 15, 30, 35 solidi. (The solidus was about \$2.25, but two solidi was the price of an ox, so that the fine was very high.)

No physician shall visit any person confined in prison without the presence of the jailor, lest the person, through fear of his punishment, seek the means of death at his hands.

When any one has called a physician to see a sick person or to heal a wound, the physician, when he sees the case, shall at once take charge of the patient under definite security.

When a physician has assumed charge of a patient under security, he must cure him. If death ensues, he

shall not demand the stipulated fee, nor shall a suit be instituted for it by either party.

If a physician has removed a cataract from the eye and restored the patient to his former health, he shall receive a fee of five solidi. If a physician injures a nobleman in bleeding him, he shall pay 150 solidi. If the patient dies, the physician shall be delivered up to one of his relatives to be dealt with as they see fit. But when a physician has killed or injured a slave he must return a slave of the same kind. The physician got over this charming ordinance by having the patient declared legally dead, in doubtful cases, in advance of treatment. When a physician has accepted a student he shall receive a fee of twelve solidi.

No one shall cast a physician into prison without hearing, except in case of murder.

Among the physicians of the West were Jews and Arabians. The ordinary physicians of the princes and even of the popes were often Jews. In the eleventh century Jews were almost the only authorized physicians of the higher order. Fort says that medical knowledge among the ancient Germans previous to the Carlovingian dynasty, which began in the seventh century, was confined to the practical use of simple medicaments and slight skill in surgery. The Germanic medicus also assumed magical powers of healing. One of the principal herbal remedies to which they ascribed magical powers, and which was a survival of the northern temple worship, was the Mandragora or alraun plant. This was much used for the cure of maladies. It was of especial benefit to sterile women and in obstetrical labors. This wonderful Mandragora was also able to prevent sickness, restore health, dispel mental anxiety, prevent family troubles, promote affluence, assist commercial operations, conciliate affections, maintain friendship, preserve conjugal fidelity, develop benevolence, and secure judicial favor at court.

Among the ancient German nations women devoted their time to the practice of medicine and surgery, and this custom obtained at a later period of the Middle Ages. Baas says that in the earliest ages women only, practiced medicine among the Germans and Celts, as they do to-day in southern Russia. Their remedies consisted of charms, runic characters, and the natural domestic remedies.

Especially in obstetrics and the cure of sterility were the German wise women skillful. To German matrons was ascribed the power to render men blind, enervated or insane through magical medicine. The ills of the body or mind to which men were subjected through the enmity of female magicians were assigned to women physicians for remedies. Magic entered largely into their art.

103. Differentiate between Talisman and Amulet.

The talisman is a substance composed of certain cabalistic characters engraved on stone, metal or other material, or written on a slip of parchment or paper. These characters are supposed to have the power to keep the possessor from dangers and from sickness.

The Hebrew word for talisman (*magan*) signifies a paper drawn or engraved with the letters composing the sacred name Jehovah, or with other potent characters. This had the power to protect from sickness, lightning and tempest. The amulet differs from the talisman in that it must be worn all the time; to lose it is to lose its power; while the talisman can be deposited in some safe place. The amulet consists of almost any substance to which the person may give a fictitious value. The Romans used amulets; they were suspended about their children's necks in the shape of little vessels carved out of amber.

104. Describe the use of charms in the cure of disease.

Charms are similar to amulets and have the same power. Cato, the Roman censor, hands us down a charm to re-

duce a dislocated limb. The practice of medicine among the Sumatran Islands is carried on by old men and women, and consists of charms. These are hung about the necks of their patients, and are long narrow rolls of paper containing scraps of verses and fanciful pictures.

From the oldest civilization to the latest times, from misty Egypt where sits the Sphinx looking out over the great plains always in silence, to America, land of light, progress, schools, and where a thousand crosses point to the heavens, this charm-belief and faith in spells reaches. Through all the nations of the world the belief in the efficacy of charms, talismans, and amulets to ward off danger and to cure disease, has extended. And it is with us yet.

105. What was the opinion of Synesius of Cyrene, concerning amulets and charms ?

Synesius of Cyrene, a bishop of the Christian church, of the 2d century A. D., and one of the most erudite philosophers of his day, decided that the art of making amulets and charms was wise and useful. He thought that as there is an affinity and sympathy between afflicted parts of the animal frame, though not contiguous, so that one member feels the pains of the other member, an identical affinity exists between parts of the terrestrial world and unseen beings of power for good or evil, who reside within the unbounded regions of the celestial spheres. By the selection of suitable plants, metals or minerals, to which specific figures and words are added, these superior beings are quickly influenced by the sympathy they have for such material types.

106. When does the modern era of medicine begin ?

About the beginning of the sixteenth century. The sixteenth century is an important one in medical history. To it belong the discovery of printing and the revival of anatomy. America had just been discovered. The world was just awakening from the lethargy of the middle ages.

107. Why is the sixteenth century so important ?

It was the golden age of Vesalius, Pare, Eustachio, Fallopius, Tagliacozio, Colombo, Acquapendente, Harvey, Rhodion, Brissot, Paracelsus, and other celebrated men. The people yet believed in astrology, magic, witches, demons, etc. But a sort of philosophy had been revived, and there were many original seekers after knowledge. There was a revival of the works of the ancients. The methods of Hippocrates were brought forward, and much medical translating was done from the Greeks, especially among the German physicians.

108. How did Brissot differ from others in regard to bleeding ?

Brissot advocated the Hippocratic method of bleeding; that is, free venesection near the diseased organ and on the same side. The later Greeks and their pupils had taught that at the outset of inflammation the blood should be taken from a distance, and on the opposite side from the seat of the disease, in small quantity, drop by drop, so that the blood was coaxed away from the diseased part—this was called derivation; while Brissot taught the bold method of revulsion, or taking blood freely near the inflammation. From that time on it was taught that blood ought to be drawn in all diseases, even in those that are chronic, and that it ought to be taken frequently and abundantly; and until Hahnemann so earnestly denounced the notion, the sick were bled, and bled, and bled again.

109. Give life and character of Paracelsus, and his influence on medicine.

Philippus Theophrastus (Aureolus Paracelsus) Bombast von Hohenheim. He was born in 1493, in the vicinity of Maria-Einsiedeln, near Zurich. His true name was Hohenheim, but out of the many prefixes he chose the one of Paracelsus, by which he has been known to fame.

His father was a physician and educated his son for the same pursuit. There is some doubt as to his state in life;

his opponents claimed that he was from the very dregs of the people, while he claimed that he was of good family. It is doubtful if Paracelsus ever attended any regular school or university; he was taught by his father. His instruction included alchemy, astrology and medicine. Baas says that later he received instruction from Eberhard Paumgartner, a bishop and monk of Corinthia, and from Matthaus Scheyt. At 16 he went to the university of Basle, where Johannes Trithemius taught him, and he used the laboratory of Sigmund von Fugger. Then he took to roaming over the world. He visited Italy, Germany and Sweden, where he served in the army as surgeon. Then he extended his travels into Asia and Egypt, Tartary and many other countries. And he tells us that he listened to everybody; to the opinions of barbers, physicians, bath-keepers, executioners, old women, and gypsies, in order that he might understand the wonders of nature.

In his thirty-second year he returned to Germany, and soon became famous for his cures. At the age of thirty-three he had cured thirteen princes who had been declared hopeless by the Galenic physicians. As a result of this, he was made professor of physic and surgery in the University of Basle in the year 1526. He lectured, contrary to the custom of the time, in the German language. He had a very good opinion of himself, since he began burning the works of Galen and Avicenna in his lecture-room; he said that all the universities had less experience than his beard, and that the down on his neck was more learned than all the authors. He said that Galen and Rhazes did not know as much as his shoe-latches. He exclaimed: "You will all follow my new system, Avicenna, Galen, Rhazes, Montagnana, Mesue; you will all follow me, ye professors of Paris, Montpellier, Germany, Cologne and Vienna, and all ye that dwell on the Rhine and Danube, ye that inhabit

the isles of the sea; and ye also, Dalmatians, Italians, Athenians, Arabians, Jews, ye will all follow my doctrines, for I am the monarch of medicine.”

All this soon lost him the esteem of the people. He was said not to have regularly graduated. He became a great drinker, a thorough drunkard. This was the habit of the time, however, and drinking bouts to see who could drink the most were very common, even among the high born. Rademacher, who was an apologist for him, and later built a system of medicine based on that of Paracelsus, said he only drank enough to stimulate his mind. But Oporimus, who lived with him as his secretary for a long time, says that during two years Paracelsus was drunk every day, never undressed himself, and went to bed with that famous sword by his side which he used occasionally to draw and flourish about the room, to the great alarm of the scribe.

It was not long before he fled from Basle on account of the following circumstances: There was a certain niggardly dignitary of the church, one Cornelius von Lichtenfels, who was a martyr to the gout. He sent for Paracelsus and agreed to give him 100 florins if he eased him of his sufferings. Paracelsus gave him three of his celebrated laudanum pills. When he got comfortable, the doctor claimed his fee; the churchman refused to pay more than the usual fee for a doctor's visit. Paracelsus sued him, and when the case came into court the judge decided against Paracelsus, who losing his temper expressed his astonishment with so great an abuse of the judge that the matter was taken up by the town council and Paracelsus was expelled from the city. Again he resumed his wanderings. Wherever he went he excited the regular faculty to hatred by his pretended or real cures and his unmitigated contempt for the doctors and their systems; he lived in many places. He now cast nativities, told fortunes,

aided those who had money to burn to find the philosopher's stone, prescribed remedies for cows and pigs, and aided in the recovery of stolen goods.

After living at Nuremburg, Augsburg, Vienna and Mindelheim he finally came to Salzburg, where he died. Some say he died from natural causes, others that he was drinking in an inn and disputing with a doctor, when he so excited the doctor to wrath that he ordered his servants to pitch the boaster and quack from the window; this was done and his neck was broken by the fall. The anatomist Soemmering found a fracture, which must have taken place before death, extending through the base of the skull.

Paracelsus thought that the contemplation of perfection of the Deity sufficed to preserve all wisdom and knowledge, that the Bible was the key to the theory of all diseases, and that it was necessary to search the Apocalypse for the signification of magic medicine. The man who blindly obeyed the will of God and who identified himself with the celestial intelligences, possessed the philosopher's stone; he could cure diseases, and prolong life as long as he wished. Life was an emanation from the stars; the sun governed the heart; the moon, the brain; Jupiter, the liver; Saturn, the gall; Mercury, the lungs; Mars, the bile; Venus, the loins. In the stomach of every human being there dwelt a demon or intelligence, that was a sort of alchemist and mixed in due proportion in his crucible the aliments that were sent into this laboratory—the belly. He first introduced opium and mercury into general use.

Paracelsus has left his impress upon modern medicine. Dr. Hering thought he was the forerunner of Hahnemann. Many distinguished men have written upon this strange character. Browning the poet wrote about him. His life may be found in many books. He is said to have been a very small man, some say not more than four feet tall.

He was crippled, according to some. There is much that is uncertain. But, there is hardly any man of the time in which he lived of which so much has been written, or who has left so great a mark in medical science.

110. Who was Jean Fernel ?

He was a distinguished contemporary of Paracelsus, born 1485, died 1558, and one of the first physicians who after Galen wrote well on the nature and cause of diseases. By birth he was a Frenchman, and after having received a thorough classical, mathematical and philosophical education, studied medicine in Paris, and soon became a distinguished practitioner. His love of study was excessive. When asked why he did not rest, he replied: "I have an eternity to rest in." He was physician to Henry II. of France, and the author of many books. He was the most remarkable physiologist of that time.

111. Who was Ambroise Paré, and what was his influence on surgery ?

He was the father of French surgery. Ambroise Paré, the grand surgeon of the sixteenth century, the earnest and devout old Huguenot, who thanked God for everything, who gave to God the honor, praise and glory of the cure, and said that he only dressed the wounds, God cured them.

He was born at Bourg-Hersent, near Laveal, in the province of Maine, France, in 1509 or '10. He died at the age of eighty-one, at Paris, December 20, 1590. His parents were humble and poor and his early education was much neglected. He studied Latin with a priest, and in return cultivated the priest's garden and curried his mule. He was early apprenticed to a barber surgeon by the name of Vialot, who taught him the rudiments of minor surgery.

Colot, the celebrated lithotomist of that period, who came into the neighborhood to operate for stone, invited

young Paré to hold his patient. The result of this opportunity to witness the surgeon's skill caused Paré to go to Paris to perfect himself in surgery.

The barber surgeons then monopolized all the knowledge of the subject and were its only teachers. There were but few works on the subject. Paré pursued his studies in Paris for three years, residing most of the time in the Hotel Dieu, the celebrated hospital. When 27 years of age he received the appointment of military surgeon, and from this date he served in that capacity for 30 years. He became a member of the company of master surgeons, and also their provost. In 1552 he was appointed surgeon to Henry II., and held the same position in these troublous times to Francis, Charles IX., and Henry III. All these monarchs were warmly attached to him. He was privy counsellor and physician, followed them to war, and attended them in peace. It is said that it was through his influence that the terrible massacre of St. Bartholomew, when 70,000 Protestants or Huguenots were killed, was stopped. We owe him the substitution of the ligature to cut or wounded blood-vessels for the actual cautery. For ages the only means of arresting hemorrhage was by the actual cautery, the hot iron applied directly to the bleeding vessel. It may be that the ancients had ideas about the ligature, but Paré was the first to use it. In naval engagements it was the custom to keep kettles filled with boiling pitch in the cockpits of vessels, ready to plunge the stump of the amputated limb in it to arrest the hemorrhage. This was the means of much secondary hemorrhage from sloughing, and many lost their lives therefrom. He thought this new method of ligation came to him by inspiration. He introduced podalic version in difficult labors; was the first to employ the twisted suture in hare-lip, and the first to reduce dislocation of the shoulder by the heel in the axilla. Of course the

surgeons of the day bitterly opposed these innovations. He did much to improve the condition of military surgery, and brought the surgical service from confusion to method. In stature he was tall, his figure slender, his countenance grave and dignified. He was a very pious man; in critical cases he was accustomed to pray in private for his patient. He attended rich and poor without distinction, and made no difference between Protestant and Catholic.

112. Who were the restorers of anatomy in the sixteenth century ?

Andreas Vesalius, Gabriello Fallopius, Bartolommeo Eustachio.

113. Give short sketch of Andreas Vesalius.

He was born at Brussels, Dec. 31, 1514. Three weasels formed the coat of arms of the family, and the name was properly Wesalius. He was of a long line of medical men; Peter Vesalius was famous; Everard, his grandson, wrote commentaries on the books of Rhazes and on the aphorisms of Hippocrates. He himself was the son of an apothecary of the time of Charles V. His primary education was at Louvain, then he went to Montpellier and Paris, where the anatomist Guido Guidi of Florence, and Gunther of Andernach on the Rhine, were his teachers. In Paris at that time only animal dissections were possible. On his return home he was only able at a great risk to steal a human skeleton from the gallows. He soon afterwards entered the military service as surgeon; here he had more chance to observe dead bodies. At the age of 22 or 23 he was raised to the important distinction of professor of anatomy at the great University at Padua. He served two years in the army, and occupied the chair of anatomy until 1543. He then lectured at the schools of Bologna and Pisa, and in 1544 was appointed physician to Charles V., an office which compelled him to go to Madrid. Here, in the midst of a brilliant career, beloved and honored, he

was seized with homesickness and left Spain. Anxious to conceal from the king the real reason of his departure, he said his resignation was from a wish to visit Jerusalem in fulfilment of a vow made in early life. While in the holy land he received the offer of the chair of anatomy in Padua, left vacant by the death of one of his pupils, Gabriel Fallopius. He embarked for Venice, but the vessel was wrecked off the island of Zante, and here he perished of grief, hunger and exposure, on October 15th, 1564, at the age of 58. His remains were placed in the church of St. Mary in that island.

114. Why did Vesalius become renowned ?

The principal reason is that he was the first physician after the Reformation to engage in human dissection. With him modern anatomy may be said to originate. Before this for many years the observations of Galen and others were regarded as of chief value. But Vesalius devoted himself to the dissection of the human body, and before he was thirty years of age he had published his great work on anatomy, illustrated by many plates.

He induced Titian's favorite pupil, Johann Stephan von Calcar, to leave his studio and sit by his side in his dissecting room and carefully sketch the parts as he demonstrated them. The engravers were set to work ; and in the year 1543, Andreas Vesalius, aged 28, published the most magnificent work on anatomy that had ever been issued. It was a folio of 700 pp. entitled : *De Humani Corporis Fabrica. Libri Septum.* It was printed in Basle, 1543. The engraved title-page represents the students, and lecturer examining a cadaver.

115. Give short sketch of Gabriello Fallopius.

Of a noble Italian family, he was born at Modena in Italy, about the year 1523. He studied medicine at Ferrara under famous masters. He was appointed professor

of anatomy at Pisa in 1548, and in 1551, at the instance of the Grand Duke of Tuscany, Cosmo I., he received a professorship at Padua, as successor to Vesalius. Here, besides the chairs of anatomy, surgery, and of botany, he also held the office of superintendent of the new botanic garden of that city. He remained at Padua to the day of his death, which occurred on the 9th of October, 1562. It is said of him that he was in the habit of obtaining criminals from the court for dissection. But he poisoned them first; there was no vivisection. He tells us: "For the prince ordered a man to be given us, whom we killed in our fashion, and dissected. I gave him 2 drachms of opium; but he having a quartian ague, had a paroxysm, which prevented the opium from taking effect. The man, in great exultation, begged us to try once more, and then, if he did not die, to ask the prince to spare his life. We gave him two other drachms of opium, and he died."

116. Of what use was Fallopius to modern anatomy?

He made many important discoveries. He first described the ethmoid and sphenoid bones, the muscles of the soft palate, and the villi and valvulae conniventes of the small intestines. He also described the ear more completely than any one had done before. In treating the ear he used an aural speculum. From him we get the name Fallopian tubes, which extend from the ovaries to the uterus. He wrote a number of books.

117. Who was Bartolommeo Eustachio, and give short biography?

He was born at San Severino, in the March of Ancona, near Salerno, in Italy. The date is not known, but it was about 1520.

Very little is known about his life except that he studied anatomy at Rome. In 1562 he was the professor of a college at Rome. Notwithstanding he was patronized by two cardinals, and had such great attainments in anatomy,

he died in poverty, as he had lived, in Rome in 1574. It was his ambition to outdo Vesalius and give to the world a more magnificent and complete treatise on the structure and functions of the human body than had ever been seen. To this end he had more carefully dissected the bodies of men and animals, the latter to elucidate the former, and his labors were crowned with more success, and he made more important discoveries, than any other anatomist in ancient or modern times. To illustrate his treatise he had about forty beautiful folio plates engraved on copper, being the first of the kind ever made for this purpose; all previous anatomical figures had been cut in wood. But his poverty prevented the publication of this book; the entire text is lost; the plates were lost to the world for 150 years. They were commenced in 1552 and were not completed at his death. They were probably stowed away in some papal library. When they were found they were presented by Pope Clement XI. to Lancisi, his physician, who published them in 1714. It is said that Pinus, a friend of Eustachius, preserved them in his life-time, and that he gave them to the family of Rubens. They must have been very complete, as seven entire plates were devoted to the kidneys alone and fourteen to the muscles. He wrote other large works, but they are lost.

118. What did Eustachius discover?

He discovered the Eustachian tubes and the stapes; he first described the tensor tympani and the cochlea, the origin of the optic nerve, and the cerebral nerves, and the supra-renal capsules. He made other important anatomical discoveries.

119. What was the effect on anatomy of the discoveries of these men?

The impulse given to anatomy by Vesalius, Fallopius and Eustachius was felt throughout Europe, and the six-

teenth and seventeenth centuries produced many anatomists.

120. Who discovered the valves of the veins ?

Hieronymus Fabricius (known as Aquapendente) discovered the valves of the veins, and that they would allow the blood to flow only from the extremity of the body.

121. Who first employed the microscope in anatomical studies ?

Malpighii, he lived in the seventeenth century.

122. What was the state of surgery in Scotland at the beginning of the sixteenth century ?

Campbell in his journey from Edinburgh to the Highlands says : "When the surgeons of Edinburgh were, in 1505, incorporated under the denominations of surgeons and barbers, it was required of them to be able to read and write, to know anatomie, nature, and complexion of every member of humanis bodie, and lykwayes to know all vaynes of the samyn, that he may make flewbathmie in dew time; together with a perfect knowledge of shaving beards. The practice was in a still more deplorable state."

123. Give date of modern era in medicine.

The modern era of Baas dates from the discovery of America, in 1492, or from the end of the fifteenth century.

124. What was the state of Europe in general at the opening of the fourteenth century ?

With the opening of the fourteenth century, commerce, business, manufactures, science and the higher arts took a new start. Dante, who was of the guild of the physicians and apothecaries, had written the Divine Comedy, and this was the century of Petrarch and Boccacio.

In Germany there was also progress ; for the first time coined money came into common use as a medium of exchange, thus greatly aiding the operations of commerce. Wickliff, of England, had denied the infallibility of the

pope, and he had followers among whom were many physicians, one of whom, Marsalius, of Padua, wrote a book defining the creed of the anti-papal party. Although astrology, theosophy, miracle working and clerical quackery were openly practised, alchemy was now cultivated in secret. From that chemistry was now developing. Schwartz, by his invention of gunpowder, reformed the art of surgery. Medical science was revived, and this age saw the revival of human practical anatomy.

Since the brilliant intellectual life at Alexandria, 300 years before Christ, when Heirophilus and Erasistratus practiced and taught practical anatomy, the knowledge of anatomy had declined, until in the mists and fogs of the middle ages it became practically lost. Even Galen dissected animals only. Both Mahommedan and Christian thought it wicked to dissect the human body.

125. To whom should the real credit be given for the revival of human dissection?

To Mondino de Luzzi, of Bologna.

126. Give a short description of his life.

He was born in 1276, and was the son of an apothecary of Bologna. He followed his father's business for a time, but afterwards studied medicine and became professor in the University of Bologna. Here he lectured on anatomy and was greatly esteemed by all the students. Between 1306 and 1315 he dissected the bodies of two women. Soon after he published an *Epitome of Anatomy*, illustrated with wood-cuts, which attained such success that it was for two hundred years the authoritative text-book on anatomy in the Italian schools. The statutes of Padua prescribed that all anatomical lectures were to adhere to the literal text of Mondino. His anatomy followed the spirit and even the nomenclature of the Arabians and of Galen. In his dissections he was afraid to open the skull

lest he commit a mortal sin. In 1316 he went as deputy to King Robert at Naples, and he died in 1326.

127. What was the condition of surgery in the fourteenth century in France ?

Either on account of this revival of anatomy, or because the Crusades had made need of them, there were in the fourteenth century many good surgeons. The actual cautery was in use, operative midwifery was united to surgery. The Italians led the array as surgeons, and in Italy it was practiced by those who were also physicians. They were adepts at plastic surgery, for the very fashionable punishment of cutting off a man's ears or nose rendered it necessary. In France surgery was entirely separated from medicine at this time. As inferior to medicine it was placed in the hands of the laity, because their old maxim taught that the church shrinks from blood. At an early period in France, the surgeons were a special class and possessed a surgical college. There were inferior and superior surgeons, both being under the control of the physicians of internal medicine, the Faculties.

128. Who was Guy de Chauliac (Guido de Cauliaco) ?

He was one of the most important French surgeons of this period. He was born in Auvergne about the year 1300. He received a good education, and followed the course of the faculty at Paris. He studied at Montpellier, where he made such progress that in a few years he was appointed to teach surgery in the university at that place. He attended the lectures at Bologna, where he saw and assisted Bertruccio to dissect the human body. He was a great student, and became the owner of a fine library, rich in the books of the earlier physicians. After his studies at the three great universities of the time, he set out on his travels. He spent several years at Lyons, where he became very celebrated, and finally settled at Avignon, where

he was chaplain and physician in ordinary to Pope Urban V. In 1363, he wrote his first work on surgery. As Mundinus was the restorer of anatomy, so was Guido that of surgery at the same period. He first reduced it to a system. His surgery was the authority in France for 200 years. Fallopius compares him to Hippocrates. He practiced most of the operations of the present day ; he treats especially of hernia ; operated for fistula in ano by the present means ; revived the use of the trephine, and long before Pare's time described forceps for the ligation of arteries.

129. Give the roster of a medical student in the fourteenth century in the University of Leipsic.

FIRST YEAR.

6 to 7 A. M.—First Canon of Avicenna with the explanations of Jacob of Forli.

1 P. M.—Book IX of Rhazes and Almansorem, with the explanations of Arculanus.

3 P. M.—The Doctors read some work aloud, in this semester the Prognosticoe of Hippocrates.

SECOND YEAR.

6 to 7 A. M.—The *Ars Parva* of Galen, with the exposition of Torrigiano.

1 P. M.—First Fen, fourth book of the Canon of Avicenna.

3 P. M.—Hippocrates.

THIRD YEAR.

6 to 7 A. M.—The Aphorisms of Hippocrates, with the commentaries of Galen and Jacobus.

1 P. M.—Fourth Fen, book of the Canon of Avicenna with the commentaries of Dinus de Garbo, or Hugo.

The students selected their authors for study and explanations at first, but in later times the authorities fixed the

studies. In those days the number of students at the different universities was very great. Oxford in the year 1340 is said to have had 14,000 students, Paris about the same time 12,000, Bologna about 10,000. Of course this includes students in every branch of learning. The teachers for a long time got no salary except at Salerno. They depended on lectures, examinations, graduating fees and practice. In the fourteenth century they usually received salaries. Bologna in 1451 had 170 professors.

130. Who were the physicians in ancient Britain, and into how many classes were they divided ?

The Druids, who were composed of three classes, the Druids proper, the Bards, and the Eubates or Ovytes.

The first class or Druids presided over and regulated public affairs, spiritual and temporal; their decisions were final over life and property, and a special part of their business was to direct and adjust all public sacrifices and religious ceremonies. They were under the direction of a principal elected by themselves and called the Arch-Druid, who could even depose the reigning prince if he saw fit.

The second class or Bards were the teachers having the care of educating the children of both sexes and all ranks. It was also their business to compose verses in commemoration of their heroes and other great people, and to furnish songs on all occasions, which they sung to the sound of harps.

The third class or Eubates, were skilled in physic, natural philosophy, astronomy, magic, divination, augury, etc.; these were the physicians.

131. What was the influence of the female Druids on medicine ?

Among them were also the female Druids or Druidesses, who practiced medicine. They collected remedies, the leaves, flowers and fruit of certain trees and herbs, espec-

ially the mistletoe. The women were also called Alran-nan or priestesses; they prophesied from the blood of their enemies whose heads they had cut off after a battle. The chosen retreat of the Druids was the groves of oaks, which was their sacred tree. They used some of its members in all of their ceremonies. Their altars were covered with its branches; their victims were adorned with smaller boughs, and all who were concerned in the sacrifices decorated themselves with wreaths made from oak leaves. Whatever grew on the oak tree was thought to be a gift from heaven, and especially the mistletoe, which, as you know, is a parasite of the oak. When they found it thus, the mistletoe was cut with a golden knife by a priest clad in a white robe, and two white bulls were sacrificed upon the spot. The name given it was All-Heal, and its virtues were thought to be many. It was considered almost universal in medicine. It was usually sought for in the spring, on the first day of a new moon, and to find it was to have a prosperous year. The mistletoe superstition is still with us.

132. Describe the charm of the snake's egg.

The anguineum or snake's egg was a remarkable charm. It was said to be produced from the saliva and frothy sweat of a number of serpents writhing in an entangled mass, and to be tossed up into the air as soon as formed. The Druid who found it caught it in his cloak as it fell and rode off at full speed on a horse, while the serpents pursued him until stopped by a running stream. A genuine specimen would float in water. Pliny says he saw one, and that it was of the size of a large apple.

133. Into how many periods is medicine in Britain divided ?

1. The era of Gwydthoniad, dating from the remote past, and winding up with the days of Prydain, about 1000 years before the Roman invasion, or nearly 1100 years B. C.

2. From Prydain to the great legislator Dunwallo Moelmutius.

3. From Dunwallo to the time of the Roman invasion, which happened 55 B. C.

4. From the Roman invasion to the sixth century.

5. From the sixth to the twelfth century.

6. From the twelfth century to 1874.

7. 1874 and later.

134. How did the medicine of the ancients reach Britain ?

There is no doubt that the medicine of the ancients reached Britain through the invasion of the Romans in 55 B. C.

135. When and where were monastic schools founded in England ?

In the year 440 a monastery was founded in England by St. Germain, and a monastic school was founded a little later in North Wales.

In the seventh century, monastic schools were founded in Oxford, Cambridge, Peterborough, Whitby and Yarrow. In Ireland monasteries were founded by St. Patrick about 440. It is said that medicine was taught in these schools.

136. Who was Flaccus Albinus Alcuinus ?

He was an Englishman to whom Charlemagne turned for scholarly aid in the eighth century. He was a native of York, and was educated in the famous school of that city. He was one of the most learned men of his time, and Charlemagne invited him to his court and invested him with authority to establish schools throughout his kingdom. He taught the sons of the great king. In his schools medicine was taught.

137. Describe healing by the king's touch.

Russel (New and Authentic History of England, London, 1782) says: "Among the other miraculous things

which they ascribed to Edward the Confessor was the special privilege of curing by the touch, the scrophulous malady from him called, the King's Evil; a privilege which some affirm to have descended upon the kings of England, his successors. * * * We shall observe that it was not peculiar to the kings of England, since the kings of France have claimed the same privilege ever since the time of Clovis, the first Christian prince of that kingdom."

The French kings usually performed this ceremony on the day when they received holy communion. Philip of Valois is said to have cured in this manner 1400 people. Louis XIII. also had this power, and it is said that it was the only thing he did not assign to Richelieu.

In the palace of Westminster, in England, there is a room dedicated to the memory of St. Marculf, who was the particular saint of this healing. It is called the chamber of St. Marculf, and in this room the kings used to perform the wonderful touch. Louis XVI., on one day, touched 1600 persons, with the words: "The king touches thee, may God cure thee." This thing was practiced in England for 700 years, to the reign of Queen Anne. There are circumstantial evidences of the cures of Edward the Confessor, who seems to have been the most successful of these charlatans. At the time of the touch it was usual to give a gold medal to the sufferer. Good Queen Bess practiced this touch, though whoever came before her was obliged to pass an examination to prove that he had nothing else but the king's evil (a sort of scrofula), when she never refused her healing touch, as it was thought that no one else but a king or queen could cure the disease.

138. Give a short account of early medicine in Ireland.

In the Emerald Isle, at a day when every man was a king, and when in the fourth Christian century the good St. Patrick was converting the wild inhabitants to Christianity, establishing churches, ordaining bishops, the art

of physic was also known. Indeed, long before that time there are traditions as old as the earliest writings of the Gaelic language and handed down by Irish historians, that point to the practice of medicine at a remote date. In the accounts of the households of great men, physicians are mentioned as officers of state. It was a rule in Ireland that learning was hereditary ; there were families of historians, of lawyers, etc. So too the medical profession passed from father to son. Many evidences show us that before the year 800 A. D., physic was in some sort cultivated in Ireland. The MSS. of the British Museum show that later Ireland shared the general medical culture of Europe. In the library of the Royal Irish Academy in Dublin, there are MS. treatises on medicine in Irish.

139. What was the influence of Cassiodorus and other monks on medicine in the sixth century ?

Cassiodorus was the first monk who recognized the necessity of preserving the wisdom of the ancients. He was of the sixth century. He studied the writings of Dioscorides on herbs, and advised the recluses of his hermitage, as a basis of sound medical instruction, to study the writings of Hippocrates and Galen, easy of access in the Latin editions. The therapeutics of Galen was especially to be studied for the knowledge needful for monasteries. He also mentions Celsus, and a treatise on herbal curatives, and other books which he had collected for a monastic library, with divine assistance.

140. Give an account of the establishment of monasteries among the Alps in the sixth century.

Monasteries were first organized in the East as refuges for the meditative Christians. Then the fathers, in order to devote themselves to a life of quiet and prayer, assembled in small bands about Rome. Edicts of the emperors broke up these establishments, and by decree they were forced to seek desert places and solitudes for their medi-

tations. This was the hermitage, with the wonderful legend of the temptations of St. Anthony, immortalized by Athanasius. It was not long until cloisters of monasteries were established around Rome. During the penitential life of the fourth century many of the patrician families became monks, seeking refuge against the terrible corruption of the age.

Along the line of the Alps monasteries were established in the sixth century. In that of St. Claude the Superior Eugendius caused both Greek and Latin to be taught to the clerics and laymen, and a taste was established for the illumination of rare manuscripts.

141. Tell something about the infirmaries in the monasteries.

In the year 528 St. Benedict fled from the world to Mount Cassino, where, after long years of labor, he founded the Order of St. Benedict. He reformed the order, set up mills, bakeries and workshops, made a garden in the monastery, and forced the monks to be self-supporting, made them work for their living. One of the monks was selected called the Cenobite, who was a sort of overseer, and especially had charge of the infirmary. This was an institution for the proper treatment of maladies, and the precursor of the hospital.

Medicine was fostered by the Benedictine monasteries, and certain fragments of letters and art were treasured. The cloister infirmary was open to the sick, who went there to obtain cure from the monk-physicians. This treatment was gratuitous, and it is related that three gold pieces being found on the body of a deceased Cenobite which he had taken from a patient, Gregory ordered them cast on the body with a terrible anathema. There were also medical writers among the monks.

142. What was the influence of Charlemagne's edict entitled *De Causis Ecclesiasticis* on medical science?

Charles the Great, Emperor of the West, ruler over

France, Spain, Italy, Hungary and Germany, did much to foster medical knowledge. Besides by wise laws fostering the liberal sciences, in 805, by an edict entitled *De Causis Ecclesiasticis*, he enacted that in addition to the sciences of calculation, the medical art must henceforth be taught the pupils of the monastic schools of the empire as a portion of the prescribed studies, receiving the active sanction of the priestly authorities. Thus he gave to medical science a start in the West as Haroun al Raschid had done in the East. He encouraged the monks with great care to copy many manuscript volumes on medical subjects, and their fine illustrations upon parchment are still the delight of modern scholars.

143. Describe the cloister of St. Gall.

This educational cloister was founded by St. Gall, an Irishman, and a pupil of St. Colombanus, near Constance, in 612. It had one of the most celebrated of the monastic medical gardens, in which many medical herbs were cultivated; it also had a chamber for every sick person, a pharmacy, and a house for physicians, with a private residence for the regular physician of the monastery.

144. Describe Charlemagne's cathedral schools.

Charlemagne was the founder of the cathedral schools in which from the year 806 medicine was taught; it is said that medical education was begun, as in the school of the Asclepiades, in childhood. The cathedral schools were of great importance in developing the art of medicine. Such schools existed in Paris, Fulda, Paderborn, Wurzburg, Hirschau, Reichenau, Metz, Osnabruck, Lyons, Cremona, Pavia and Florence.

145. Give the names of the three most important schools in the ninth century.

Monte Cassino, Salerno and Montpellier.

146. Describe the school of Monte Cassino.

Monte Cassino was founded by the Benedictines on the site of an ancient temple of Apollo in Campania, and for some years it was the centre of medical learning.

147. Describe the school of Salerno.

Salerno, in the province of Naples, was founded by the Romans 200 B. C. After the establishment of Christianity Salerno became a resort for pilgrims and a sort of medical establishment, from the fact that in its cathedral were the bones of St. Matthew and the saints Thecla, Susanna and Archelais. Charlemagne founded a school there about 802, according to some authorities, but others think that this school of Salerno dates from the destruction of the library of Alexandria by the Arabs. After this event the professors and physicians were scattered in many countries, and some seeking refuge at Salerno founded the medical school. Salerno was situated on the route taken by the pilgrims and travelers passing from Europe to Asia, and of the fleets that transported those religious fanatics, the crusaders.

The city was a delightful haven, had a mild climate and many attractions for the wayfarer. Thus it became a watering place for the people of the time. The school of Salerno or Salernum was not altogether a monkish school. Its teachers and professors were from the Greeks, Arabians and Jews. It was a great university, whose heads were the great scholars of the time. The influence of this school on the medical knowledge of the latter portion of the Middle Ages was very great; it was to Europe what the University of Heidelberg is to-day—a centre of erudition.

Founded most likely in the eighth century, it reached the zenith of its excellence in the twelfth and thirteenth centuries, and from that time it gradually declined until in the fourteenth century the poet Petrarch mentions the

school as a memory of the past. In 1748 a dispute arose in Paris relating to the rank of physicians and surgeons, and the decision was referred to the school of Salernum. In 1811 a formal decree reduced it to a gymnasium or preparatory school.

One of the noteworthy societies of this university was a Hippocratic Union which was instituted in order to study the ancient medical writings. This association waxed in fame until it gave to the entire city the title of *Civitas Hippocratica*. Ordinary physicians might become fellows of the college; its pupils, teachers and fellows were exempt from taxation. The first teachers of medicine at Salernum were a Jew, Elinus, a Roman magister, Salernus, an Arabian, Adala, and a Greek, Pontus. Each is said to have taught his own countrymen, and each in his own language. Jurisprudence, philosophy, theology and medicine were taught. It was never properly a monkish school, but always possessed married teachers, Baas says that even women taught within its halls.

The tendency of the medical department of this great university was entirely practical. Great attention was paid to symptomatology, dietetics, treatment and *materia-medica*; but little time was given to anatomy and physiology. In the twelfth century Frederick II. ordered a special provision with respect to the study of anatomy at this school, made in his medical code. It is said that by the emperor's direction a dissection was made every five years at Salernum. No one was allowed to practice medicine in the kingdom of Naples who had not been examined and created a master by the college of Salernum. In order to do this the student was obliged to study logic three years, and follow a course of medicine and surgery for five years. In order to become admitted to an examination at the end of the term, the student must present a certificate of his legitimate birth, and that he had attained his 25th

year (according to Baas his 21st year); after this he was examined publicly in the therapeutics of Galen, the first book of Avicenna, and the aphorisms of Hippocrates. He then took an oath to be faithful to good conduct, to submit to the rules of the profession, to give gratuitous attention to the poor and not to share in the profits of the apothecaries, to teach correctly according to the received doctrines, and to administer no poisons. All these things having been fulfilled, the candidate received a ring, a wreath of laurel, a kiss, and finally the benediction. The graduation was in public. Renouard says that after this the candidate must have his diploma confirmed by the proper officer of state, and was then obliged to continue with some experienced physician before entering into independent practice. Baas says that after the graduation he could teach and practice wherever he wished; the office of medical teacher was open also to him. The degree conferred was that of magister, or doctor. Of Arabian origin and a translation of the title *rabbi*, the title was not used before the twelfth century, and was only conferred by the universities. A student wishing to study surgery must attend particularly to anatomy; he studied but one year, and was called master. There were two masterships, one of medicine and surgery, one of surgery alone.

The two principal medical treatises of the school of Salerno are the *Compendium Salernitanum* discovered in MS. in 1837, and the *Regimen Sanitatis Salerni*. The *Compendium* is a complete text-book of medicine like the modern cyclopædias; the *Regimen* is a Latin poem upon medical topics.

The teachings at Salerno were a mixture of methodism, dogmatism, and superstition. The fame of this great school spread abroad and many invalids went thither to be healed. These pilgrimages commenced in the year 984, when Adelberon, Archbishop of Verona, visited the

place. Many very great men of the time made visits to it in later years.

148. Describe the School of Montpellier.

Its first mention in medicine is in 1137, when Bishop Adelbert II. went there to listen to its medical teachers. Some time later a faculty of philosophy was added and one of law in 1298. Both Jews and Christians lived within the walls of the city, the Jews being especially esteemed as translators. It was an important school and was frequented by many renowned scholars.

149. What influence did these schools exert on medical science?

These schools of medicine, says Baas, formed historic bridges over which ancient culture took its way during the Middle Ages from East to West. They were the means of crystalizing the great thoughts of the early fathers so that we of the present time are enabled to understand them.

150. What were the Crusades, and give their origin?

In the 8th, 9th, and 10th centuries, many had made pilgrimages to the Holy Land; for the most part these were converted Jews and Christian devotees. Some went to Jerusalem from motives of curiosity; others to thus obtain divine pardon for their sins, for such a pilgrimage was thought to be sufficient to wipe away many transgressions. For many years these pilgrims were not molested in Palestine; but in the 10th century the caliphs imposed a tax of a bezant upon each pilgrim that entered Jerusalem. This to the poorer pilgrims was a great grievance. So they were obliged to wait without the gates until some rich devotee came who would pay their entrance fee.

The sum from this tax was a mine of wealth to the Moslem governors of Palestine. At the close of the 10th century it was thought that the end of the world was at

hand, the thousand years of the Apocalypse was near completion, and Jesus Christ would descend upon Jerusalem and judge mankind. Panic seized the weak, the credulous, and the guilty; forsaking their homes, kindred and occupation, they hastened to Jerusalem to await the coming of the Lord, imagining that their pious pilgrimage would free them from sin. The road from the West of Europe and Constantinople became a great highway of pilgrims and beggars; the monks, the almsgivers of the times, were obliged to refuse aid to the hordes; many lived upon berries that ripened on the roadways. Swarms besieged the Holy Land; the Turks were annoyed by the number that overran their country . . . they plundered them, beat them with stripes, and kept them for months at the Holy Gates in lieu of the golden bezant for admission. The day of judgment did not come, and so pilgrims a few at a time returned to Europe and told of their sufferings. These cruelties became the wrongs of Christendom. Fresh hordes now hastened on the difficult journey, sure of gaining the favor of heaven by visiting the holy sepulchre.

In 1095 there appeared one Peter the Hermit, a man enthusiastic, chivalrous, bigoted, and probably crazy. He had been a monk of Amiens, and previous to this a soldier. He had visited Jerusalem and was filled with indignation at the cruel persecutions inflicted on the Christian pilgrims. He returned to his home and began a crusade of wild preaching against the abominations of the infidels and their defilement of the Holy Places of Jerusalem and Palestine. He called upon the people to arm against the infidels, incited the clergy, and aroused the enthusiasm of the people and nobles. Musing in Palestine he planned to rouse the powers of all Christendom to rescue the Christians of the East from the thralldom of the Mussulmen, and the sepulchre from the infidel. Peter

told his views to Simeon, Patriarch of the Greek church at Jerusalem, and this good prelate sent letters to the pope and to the monarchs of Christendom telling of the sorrows of the Christians of Jerusalem and urging that arms be taken up in their rescue. Peter now hastened to Italy. Pope Urban II. sat on St. Peter's throne. He listened to the sad story and read the letters and appeals. At the Council of Clermont Urban gave Peter full powers to go forth and preach his holy war to the Christian nations of the world.

The nations were aroused; eternal rewards were promised to all who assumed the red cross; halt and lame, women and children, the pious, the fanatic, the needy, the dissolute, all enrolled themselves in this remarkable army. Walter the Penniless set out with the first army in the spring of 1096; each one was his own leader. Soon other bands were formed. It is said that 300,000 men, women and children of the lowest of Europe spread themselves over Hungary and Germany.

They robbed and murdered, and in self defense the Hungarians were obliged to fight with them. Walter straggled on to Constantinople with his horde. Peter the Hermit was not far behind him. He led another rabble, and riot and rapine went with him. It was everywhere; all Europe was mad. This rabble did not conquer the Holy City, but a more orderly and soldierly expedition was organized under certain noble knights, among whom was Godfrey of Bouillon, duke of Lorraine, and count Raymond of Toulouse. Several armies were raised and marching by different routes united at Constantinople. He besieged several cities, among which was Antioch; at this place, when the Christian host were worn and tired, Peter had a vision in which he saw the lance that pierced the side of Christ, and telling where to dig they found it. He had another vision and was directed to carry the

spear at the head of the army. Dreaming became contagious; other monks had dreams. So time passed; Antioch was taken, battles were fought, disruptions were prevalent. At last Godfrey set fire to his camp at Archas and set forward in the night. After a march of several hours the sun rose, and before our army lay the sun-kissed towers of the holy city. The soldiers knelt upon the ground exclaiming, "Jerusalem, Jerusalem," in pious joy. After a long and bitter siege, on July the 15th, 1099, the city was taken, the Christians were free.

151. What influence did the crusades have on medicine ?

It can readily be seen that these years of fanatical war exercised a great influence upon the art of medicine. Many physicians, especially the Jews, followed the crusading host; hospitals were founded; there were the many wounded to be cared for; and many new diseases arose from this war. This holy war also struck a blow at serfdom, as every serf who went crusading became free. And free, many of them devoted themselves to liberal arts, commerce, science, and to medicine.

From this time the number of physicians increased. The attendants at the hospital at Jerusalem formed themselves into brotherhoods . . . as those of St. Mary and St. Lazarus; there were also the orders of the Knights Templar and St. John. One of the dread diseases that increased was leprosy; to such an extent did this disease increase that in France alone there were 2,000 leper-houses and throughout Christendom there were as many as 19 000.

In a word, the wars of the crusades were the means of extending the art of medicine, increasing the number of physicians, carrying medical knowledge from one country to another, and affording many new and interesting diseases for the doctors to puzzle over.

152. When was the apothecary first known in England?

The apothecary was first known in England in the 12th century. Henry, king of England, had his apothecary in the year 1198, who was an officer of high repute, whose name was Richardus and who was also bishop of London. For the most part the pharmacies were the places in the cloisters where the monkish physicians stored their drugs and simples.

153. Give a short sketch of some English physicians in the 12th and 13 centuries.

Michael Scott, known as the Wizard of the North, translated Aristotle. About the same time (1194) a Peterborough abbot owned the writings of Almanzor on the medical virtues of plants, and the herbarium of Dioscorides; these he transcribed, with a treatise on medicine by Pantiginus. An archbishop had before this presented the treatises of Avicenna to an English church and at this age the writings of Averroes were made the subject of public scholastic lectures at Cambridge. In 1250 one Bartholomy of England published a work on medicine. But Gilbertus Anglicus, while not the first English writer on medical subjects, was the first whose works were published.

He lived towards the close of the 13th century, and was noted for his learning and especially for his knowledge of herbs. He copied from the Arabians largely. He it was who gave the name of king's evil to the scrofulous swellings cured by the royal touch of which we have spoken. He also mentions a cure by sulphur baths.

He wrote a book called *Laurea Anglicana*, in which he advocates the Arabian and scholastico-Galenic views. He says that he would have advocated the views of Hippocrates were he willing to pass for a fool. He well describes leprosy from impure coition, the exhibition of mercurial preparations and of acetate of ammonia, and

the virtues of sulphurous waters. One of his remarkable statements is that lice spring partly from the blood and mucus, and partly from the yellow and black bile. The vital spirits in the body take a direct, the animal spirits a circular course; the conscious soul is no bare form like the vegetative, hence the former is immortal. For stone he recommended the blood of a he-goat which has been fed on diuretics. Lethargy he treats by tying a squealing sow to the headstead of the patient, that he may hear its grunt. For sexual debility he ordered a paper on which was writ a charm. It is likely that he was educated at Salerno.

154. Give a short sketch of John Gaddesden.

He was another physician of the fourteenth century. He lived in England and was the first native Englishman who held the position of physician-in-ordinary to the king. He was a professor in Merton College. He wrote a book called the *Rosa Anglica*, or English Rose, that professed to embrace the whole practice of medicine; this was taken mostly from the Arabians, but with some original additions. He was full of scholastic subtleties, used mystical remedies, was superstitious and a charlatan in much.

155. Give a short sketch of John Arden.

In the year 1349 one John Arden was practicing as a surgeon at Newark; he removed to London in 1370. He wrote a large work entitled *Practica*. It was in Latin, and though MS. of the whole work exists in Oxford and London, it has never been published. Arden served as an army surgeon in France in later life. He was of the Montpellier School. His fad was injections, and he thought salt injections were the best; it is said that he invented an instrument for this purpose. It was not common in his time, and he says that he has a hundred times earned fame and money in distant parts by the operation.

He also recommends the doctor to stipulate for pay before he takes a case, and to make as good a bargain as possible. His idea was to make his professional work fit to mercantile rules.

156. Give an account of Roger Bacon.

He was the champion of intellectual power of the thirteenth century. In his day the clergy were all powerful. By the Council of Montpellier held in 1162 a decree was passed forbidding the practice of medicine by the monks. It was many years before this law was obeyed, for until the 14th century all the physicians were ecclesiastics in thought, education and social standing.

Bacon was born in 1214, near Kilchester in Somersetshire, of a good and wealthy family; in the time of Henry III. their property was despoiled, and several members exiled. He is said to have expended from 8 to 10,000 pounds upon his experiments, and this was from his patrimony. He went to Oxford, where his great abilities were soon recognized. A year afterwards he visited Paris, spending some time at the university there. Paris was the centre of intellectual life at that time.

Bacon was disgusted with the superficial scholastic methods of the time, and devoted himself to the study of the languages and experimental researches, and gained much renown. He took the degree of Doctor of Theology, and here gained from his contemporaries the title *Mirabilis*. In 1250, we find him again at Oxford, and about this time he entered the Franciscan order. His fame spread at Oxford, although it was whispered that he had dealings in magic and the black arts. Some doubts of his orthodoxy were expressed, and in 1257 Bonaventura, the General of his order, forbade his lectures in Oxford, and commanded him to leave the town and place himself under the command of the body in Paris. There he remained for ten years under constant supervision, suffering great priva-

tions, and not allowed to write anything that might be published. But while in Paris his fame had reached the Papal legate in England, Guy de Foulques, who was a ripe scholar, and who afterwards became Pope Clement IV. He wrote to Bacon ordering him, notwithstanding the interdict of his superiors, to write out and send to him a treatise on the sciences. Previous to this he, discouraged, had composed but little; but taking heart of grace and despite of the many obstacles thrown in his way by the jealousy of his superiors and brother friars, he completed in 18 months three large treatises, the *Opus Magnus*, *Opus Minus* and *Opus Tertium*. In 1268, Bacon was released and allowed to return to Oxford, where he continued his labors in experimental science, and in completing his numerous treatises. He wrote a great many works on alchemy, philosophy and physics.

He was the first astronomer of his time; he detected the errors in the Julian Calendar; described the spherical form of the earth; investigated the phenomenon of the tides; discovered the use of magnifying glasses and of the camera obscura; he describes a mixture of charcoal, nitre and sulphur which, when ignited, explodes with fiery coruscations and a noise like thunder. This was of course gunpowder. With all he was filled with superstition, as were all the alchemists of his time. He tells of a plowman in Sicily who found a jar of yellow water, and by drinking it he became a courtier, handsome and clever, and lived thus for 80 years; this was of course potable gold, which was one of the things sought for in that time. He believed in the philosopher's stone which was to change base metal into pure gold, and he knew the circle had been squared.

157. Give a short sketch of Johann Baptist van Helmont.

He was the younger son of a noble family and was born in Brussels in 1578. His father died in his second year.

While a mere boy he entered the University of Louvain; at 17 years of age he had completed his studies in mathematics, astronomy, astrology and philosophy, and would then have received the degree of Magister had he not decided that such a title would be frivolous, and that he was only a student and not entitled to such an honor. He now went to the Jesuits, who at that time taught even magic. He soon left them and gave himself to the study of Stoic philosophy. Getting the idea that the Capuchin friars (who really are gluttons) were the real Christian Stoics, he wished to join them. But he soon abandoned them also, and resumed his studies of law, botany and medicine. But he was disgusted with the practice and theory of medicine, since by it he could not be cured of the itch contracted from the glove of a girl who had the scabies, which he had drawn on his hand. So he turned to the mystics Johann Tauler and Thomas á Kempis, and from them decided that true wisdom was to be gained only by fasting, supplication and prayer, and in poverty. And so he declined the offer of office of imperial physician. He chose the poverty of Christ, giving to his sister all his worldly possessions. For this he thought himself repaid by rich heavenly visions; in one of these he saw his own soul like a great empty bladder, floating over a great abyss. He now commenced to travel and to practice medicine as a labor of love, being unwilling to accept money from his sick fellow-man in return for so doubtful an art. He received his degree as Doctor of Medicine in 1599. During his travels he became acquainted with a person who introduced him to the writings of Paracelsus. These works he studied zealously. Finally after ten years he returned home, abandoned the poverty of Christ and contracted marriage with a rich heiress, by whom he had several children. Van Helmont died in 1644.

Van Helmont transmuted the fancies of Paracelsus into

a sort of mystic and pious system based on chemical principles. He was a considerable chemist. He thought that air and water were the elements; from the water everything on earth takes its origin—the world is the creation of God. Disease is something active and is caused by the fall of man. The spirit of man came from God, but on account of the fall became so corrupted that a lesser spirit in man gained control. There was next lower a perceptive soul, and below that a something which he called *Archaeus*; then there is also Gas which arose by the influence of the *Archaeus* on water. To Van Helmont we owe this word Gas. Van Helmont declared a very mystical and fanciful philosophy; the spleen and the stomach were the rulers over the body. The spleen presided over the abdomen, the sexual organs; the stomach over sleep, waking, and folly. This *Archaeus* also possessed a great power both in man and in animals. Disease depended on a perverted action of the *Archaeus*. He laid great claim on conjurations, charms, prayer, and the power of God. It is said that he also gave earthly medicines. He recommends Opium, Mercury, Antimony and wine in fevers. He had no followers.

158. Describe the Iatrochemical or chemical system of Francois de la Boe. (Sylvius.)

He was a Netherlander who was born at Hanau in 1614. He studied at Paris, Sedan, Leyden and Basle, where at the age of 23 he took his doctor's degree. He practiced with great success at Hanau, Leyden and Amsterdam. He was of fine presence and rich, sociable and amiable. In 1660 he was called to a professorship at Leyden. Here he had many pupils on account of the clinical method of instruction and his convenient system with its therapeutics. A petechial fever which prevailed in Leyden in 1668 first carried off his wife and daughter and then he himself died of it.

The system of Sylvius is based on chemistry; Iatro-Chemistry being the successor of Alchemy and the forerunner of real chemistry. The physiology of Sylvius is known as humoral. There were three cardinal fluids—the saliva, the pancreatic fluid and the bile. The majority of diseases are caused by excess of acidity in the system or alkalinity. Health consisted in the undisturbed performance in the body of the process of fermentation; the saliva was thought to give rise to hectic fevers because there was some fever after eating.

In his Semeiology and Diagnostics he says: “As often as the whole blood appears black, it indicates that the acidity predominates; if the blood is redder, it shows that the bile in it is overabundant. In the first case the acid in the body and in the blood must be diminished; in the second, the bile must be lessened and its power broken. If the blood which is normally free from odor and of a sweetish taste, tastes salty, the alkali in the body is too pure, and when brought into contact with the acid spiritus engenders a humor of a saline taste which is prejudicial to the body. Fever is diagnosed by the pulse and not by the heat of the body. His therapeutics were simple. We must get rid of the acids or the alkalies. When the acid is in excess give an alkali, when the alkali is in excess give an acid. He used heating methods, emetics, absorbents, etc., but repudiated bleeding. The general object of therapeutics was to keep up the strength of the patient, remove diseases, mitigate symptoms, and remove their causes. These very concise notions made him many followers, and it has been said that his therapeutics cost as many lives as the thirty years’ war.

159. Give an account of the school of Solidism, or the Iatro-Mathematical school.

This school called also Iatro-mechanical, Iatro-physical, devoted itself especially to the solid parts. The form

and function of the solid parts were sought after by weighing, measuring, calculating, by physical apparatus. Digestion was referred to a mechanical trituration, and the absorption of the chyle was explained as due to the pressure arising from the action of the intestinal movements upon the comminuted food. The secretions were referred to the resistance of the corners, curves and angles of the vascular system, and to the difference or agreement of the specific weight of the secreting parts and the secreting materials. Respiration was based on the mechanics of the motions of the thorax. Warmth upon friction of the blood corpuscles. Sensation upon vibration of the nerves. The action of the heart upon the mechanism of the pump. The circulation on the motion of fluids in tubes; locomotion on the action of levers. Health was the undisturbed performance of the physical and mechanical processes of the body. In pathology the ingesta and the excreta were compared to determine the existence of disease. In therapeutics the Hippocratic doctrine of experience was followed.

160. Who founded this Iatro-mechanical school, and give short sketch of him ?

Giovanni Alfonso Borelli was the founder of the mechanical school. He was of Naples, born in 1608. He was a teacher of mathematics at Messina; in 1656 he went to Pisa and thence to Florence, where he became a member of the academy there. He was so quarrelsome that he was obliged to retire to Messina; thence he went to Rome. Christiana of Sweden, the daughter of the great Gustavus Adolphus, lived at Rome and had surrounded herself with a circle of savants and artists, and she supported him. She fell into straitened circumstances, and Borelli entered a monastery and supported himself by teaching mathematics; some say he begged about the streets of Rome. He dedicated to Christiana his work—

De Motu Animalium. This was not printed until his death, which occurred in 1679. He was of considerable service to the progress of physiology. He also had followers.

161. Give sketch of the life of Thomas Sydenham.

Born in 1624 at Winford Eagle, in Dorsetshire, England. His father was a man of large fortune. But little is known of his early life; it was troublous times in England. At the age of 18, in 1642, he went as commoner to Magdalen Hall in Oxford, but war interrupted his studies. By some it is said that he was a soldier in the Parliamentary army in 1642. It is said that he held a commission in the king's army. But little is known of this time of his life. In 1646, he returned to his studies in Oxford, and in 1648, at the age of 24, he took the degree of bachelor of physic. After the completion of his studies at Oxford, Sydenham went to the celebrated school at Montpellier. He took his degree of doctor at Cambridge, and settled in Westminster, London. He began to practice at Westminster sometime before 1661. He received license from the College of Physicians of London, then celebrated, and which had been founded by Sir Thomas Linacre some years before. He suffered greatly from gout, and died in 1789, aged 65 years. He was buried in the church of St. James, Westminster. In 1810, a monument was erected to him by the college of physicians. All that remain of his writings are contained in one book. An edition by Dr. Benj. Rush was published in Philadelphia in 1809. His model was Hippocrates, and he thought that we should follow nature; he differed from him in attempting to arrest the natural course of disease by giving specifics. He was called the English Hippocrates. He left a great impress on English medicine.

162. Give a brief biography of William Harvey, with an account of his discoveries in medicine.

He was born in April 2d, 1578, at Folkestone in Kent. At ten years of age he was sent to the grammar school at Canterbury, and at 14 transferred to Caius College, Cambridge, where he was admitted a pensioner May 31, 1593. He studied at the university five years, after which he traveled through France and Germany, and then fixed himself at Padua, celebrated for its medical school. Here he studied under the most renowned teachers, one of whom, Fabricius, of Aquapendente, was a celebrated anatomist and surgeon. It is said that the lectures of Fabricius were given by candle-light. Under this celebrated teacher Harvey learned of the existence of the valves in the veins, and this is the first step in the establishment of the physiology of circulation. He graduated at Padua April 25, 1602.

He then returned to England, was incorporated at Cambridge, and commenced to practice in London. In 1607 he became a Fellow of the London College of Physicians. He was appointed a physician to St. Bartholomew's Hospital, and in 1615 was chosen professor of anatomy and surgery in the college, and it was here that he first developed his theory of the circulation of the blood. No printed account was put forth until 1628. This appeared at Frankfort, and was dedicated to Charles I. There is a second dedication to the College of Physicians, in which Harvey mentions the declaration of his doctrine made in his lectures on anatomy, and the defense of his opinions by practical demonstration as against the opposition and objections that were raised. For a storm of calumny overwhelmed this man, as it does all who find out any great truth of nature. Harvey lost much by the publication of this new theory. A writer of the times says: "After his book of the circulation of the

blood came out he lost mightily in practice, and it was believed by the vulgar that he was crack-brained." Harvey illustrates his lectures by six large diagrams, which may yet be seen at the college. These were large boards of the size of the human frame, and on them was displayed the system of the blood-vessels separated from the rest of the body; they constitute tabular views of the circulatory system, and so carefully were they made that one of them demonstrates the semilunar valves at the origin of the aorta. The MSS. of his lectures were destroyed in the great fire of London. Before Harvey the notions of the blood were fanciful. Servetus promulgated certain ideas, others have vaguely expressed themselves. A physician of this city, Dr. John Redman Coxe, some years ago published a book in which he doubted Harvey's claim.

King Charles took great interest in these discoveries and witnessed several experiments. He appointed Harvey his physician in 1632. In 1633 he accompanied the king and his court to Scotland. When "Old Parr" died the king gave the body to Harvey to dissect. Harvey followed the ill fortunes of the hapless king; he was at the battle of Edgehill in 1642, and Aubrey tells us that the prince and duke of York were entrusted to the care of Harvey. He withdrew with them into a hedge, and taking out a book began to read; he had not read long before a bullet grazed on the ground near him, which caused him to move his station. He afterwards attended the king at Oxford and was incorporated M. D. at the university, December 7, 1642. Three years subsequent to this he was by the Royal mandate elected Warden of the Merton College in the place of Dr. Nath'l Brent, who had quitted the university and taken the covenant. In the year 1646, on Oxford surrendering to Parliament, he left the city and went to London, where he lived with his brother Elias, a rich merchant living in the Poultry, and sometimes at Roe-

hampton. Previous to the appointment at Merton he went with the earls of Arundel and Surrey, then Lord High Marshal of England, in an embassy to Vienna. It is said that on this trip he would make excursions into the woods, making observations on strange trees, plants, and earths, and sometimes was like to become lost; so that the Lord Ambassador would be angry with him for his scholarly vagaries. During the stay at Oxford Harvey performed many experiments and made many researches on the subject of generation.

He wrote a book defending his circulation theory. Harvey was fifty years old when he published the quarto of seventy-two pages called: *Exercitatio Anatomica de motu Cordis et sanguinis in Animalibus*. It is said by some that he traveled in Italy in 1649, with Dr. Ent; Pettigrew thinks this unlikely. But he retired to Comb in Surrey, where he had caves made in the earth in which in summer time he was delighted to meditate.

In 1654 Elias his brother bought the Cockaine house, which was in 1860 the Excise office; it was a noble house, and the doctor was wont to contemplate upon the leads (or roof), and had his several stations according to the sun and wind. Aubrey says: "He did delight to be in the dark and told me he could then best contemplate."

In 1651 Harvey was visited at Comb by Dr. Ent, and was by him prevailed upon to allow the publication of the work on generation. It was published the same year. Many of his papers were lost during the rebellion; his residence at Whitehall was plundered and his MSS destroyed, and thus the notes of many experiments were lost. This he always deplored. Harvey was the first to point out the origin of the chicken from the cicatricula of the ovum, and he stated the punctum saliens to be the heart.

In 1653 Harvey offered to build for the College of Phy-

sicians a library and museum and to present them to that body. The College accepted the proposal and voted the erection of a marble statue of Harvey in his doctoral robes, to be placed in the hall, with an inscription recording his great generosity and the immortality his works had obtained for him.

In 1653 this building was completed and Harvey gave his colleagues a grand entertainment. The doors of the Museum were thrown open, and the mansion and its contents presented by him to the College. He was now seventy-five years of age, and he resigned his professorship of anatomy and surgery. The next year he was elected to the presidency of the College, but declined on account of his great age. In 1656 he assigned to the College his paternal estate of £56 a year in perpetuity, to institute an oration each year in commemoration of the benefactors of the College, a gratuity to the orator, and something for the keeper of the library and museum. From this originated the Harveian oration, many of which have been published and are of importance in medical history. Harvey had the gout, and Aubrey, a cotemporary, thus describes his treatment of himself: "He would then sitt with his leggs bare, if it were frost, on the leads of Cockaine House, putt them into a payle of water till he was almost dead with the cold, and betake himself to his stove, and so 'twas gone. "He died June 3d, 1657, but was not buried until the 23d of the month. He was buried in a vault belonging to his family built by his brother Eliab, at Hampstead in Essex, where a handsome monument stands to his memory. Aubrey writes: "He is lapped in lead, and on his breast in great letters, Dr. William Harvey, the 3d of June, 1657, aged 79 years. His coffin may be seen in the vault and resembles an Egyptian mummy. It is of lead. The morning of his death he went to speake and found he had the dead palsy

in his tongue. He knew there was no hope of recovery; he sent for his nephews, to one of whom he gives the minute watch with which he made his experiments, to another, another remembrance. He made a sign to Sam-broke, his apothecary, to lett him blood in the tongue, which did little or no good, and so he ended his days. The palsie did give him an easy passport." He left an estate of about \$100,000 after having been in practice for about fifty years.

"He was," Aubrey says, "an excellent anatomist, but I never heard that any one admired his therapeutic way. I knew several practitioners in this town who would not have given three pence for one of his prescriptions, as a man could hardly tell by one of them what he did aim at. He did not care for chemistry, and understood Latin and Greek pretty well, but wrote bad Latin. He was well versed in mathematics, and was fond of working out problems, shortly before his death. He was always affable and willing to instruct. He was not tall, but of the lowest stature, round faced, livaster complexion, little eyes, round, very black, and full of spirit; his hair was black as a raven, but quite white twenty years before he died. He was very cholerique, and in his younger days wore a dagger which he would draw on the slightest occasion."

163. What was the general progress of medicine during the seventeenth century?

During the seventeenth century great progress was made in medical science. Surgery took rapid strides forward. Denis, the French surgeon, performed the first transfusion in man. The French family of lithotomists, the Colots, Leurent and Philippe, were also distinguished for their skill. Ophthalmology was also much advanced in France. The Spanish and Germans had notable surgeons. England enters the field of surgery with important names—Wise-

man, Sir Christopher Wren, John Woodall, Lowham, and many others. In obstetrics there was also an advance; to this century belongs the operation of version. Anatomy and physiology are debtors to this century also.

In 1661, an Italian physiologist rounded out Harvey's discovery by the discovery of the capillary circulation, or the connection between the arteries and veins. After him others made further experiments upon animals in the same direction. In 1664, Conrad Victor Schneider, of Bitterfield in Saxony, made some important investigations upon the mucous membrane of the nose; he found out that it was this membrane and not the brain that secreted the mucus discharged in disease, and his name you will remember recalls this as the Schneiderian membrane. Many other important discoveries were made, and names of discoverers given to various parts of the body. Legal medicine may be said to date from the 17th century. Zacchius, 1584 to 1659, physician to the pope, wrote a work famous for its legal knowledge. Baas says that he may be looked on as the founder of legal medicine. Medical education now took a higher stand. Anatomy was now studied by means of the human body.

164. Describe the doctrine of Signatures.

It was thought that certain plants had an outward and visible sign indicating a medicinal quality, and that these plants corresponded in shape, color, or form to certain organs of the body, or rather resembled these organs, and therefore when an organ was diseased the plant resembling it was the right one with which to make a cure.

In Prague, in 1608, Crollius wrote a book upon the subject, and this book was translated into English, and published in London under the title of "A Treatise of Signatures of internal things, or a true and lively anatomy of the greater and lesser world."

The herbalist, William Coles, wrote a fanciful book

called "Adam in Eden; or, The Paradise of Plants." It treats of this doctrine. He says that Oswald Crollius was the discoverer.

Thus walnuts are said to have the signature of the head. The outer husk resembles the pericranium or outward skin of the skull where on the hair grows, and therefore, salt made of the husk of the walnut is exceedingly good for wounds in the head. The inner woody shell hath the signature of the skull, and the little yellow skin or peel, that of the dura mater and pia mater, which are the thin scarfs that envelope the brain. The kernel hath the very figure of the brain, and therefore it is very profitable for the brain and resists poisons. So too the peony, not yet blown, was thought to have some signature and appropriation with the head of man, having sutures and little veins dispersed up and down, like unto those that environ the brain; when the flowers blow they open an outward little skin representing the skull; the peony, therefore, was very useful against the falling sickness. Poppy heads with their crown somewhat represented the head and brain, and therefore decoctions of them were used successfully in diseases of the head. And lilies of the valley were known by signature to cure apoplexy, for as that disease is caused by the dropping of humors into the principal ventricles of the brain, so the flowers of this lily, hanging on the plants as if they were drops, are of wonderful use herein. All capillary (or hair-like) herbs were of sovereign use in diseases of the hair; and as the purple and yellow spots and stripes upon the flower of wyebright much resemble the look of diseased eyes, it was found out by signature that this herb would cure the same.

Crollius observes that the woody scales of which the cones of pine trees are composed resemble the fore teeth, and therefore pine leaves boiled in vinegar make a gargle which relieves the toothache. Thistles and holly leaves signify

by their prickles that they are excellent for pleurisy and stitches in the side. Saxifrage will break the stone; all roots, barks, and flowers which are yellow will cure the yellow jaundice. So what was called kitchen physic came about; the dames were learned in simples, and every herb had its part of the body.

For an article on this, see *Med. Press and Circular*, London, v. 46 (n. ser.), No. 2576 (Sept. 12, 1888).

165. What prominent physicians belong to the 18th century?

Boerhaave, Stahl, Hoffmann, John Brown, Von Haller, Cullen, Erasmus, Darwin (father of the naturalist), the Hunters, Edward Jenner, and many more eminent physicians lived and wrote. And our own Hahnemann was born in the 18th century, and gave to the world the truth of Homœopathy before the century was ended; just one hundred years ago.

166. Who was Boerhaave, and give account of his life?

Herman Boerhaave was born at the village of Voorhout, near Leyden, December 31, 1668. His father was a clergyman and skilled in Hebrew, Latin, and Greek, and Herman was destined for the church, and was educated accordingly. At the age of 11 he could translate and even compose Latin. At 14 he was sent to the public school at Leyden, and at 16 entered the University at Leyden. At 21 he delivered a Latin oration to prove that the doctrine of Epicurus concerning the chief good was understood by Cicero; for this he received a gold medal. In 1690 he took the degree of philosophy, and also held a public disputation in theology. His father died and he sought to continue his studies in divinity by teaching mathematics. By John Vandenburg, burgher of Leyden, he was recommended to unite the study of physic to the others; this settled his career. He determined to take a course in physic before his ordination. He now studied

the anatomical works of Vesalius, Fallopius, and Bartholin; and witnessed the dissections of Nuck; he also dissected and visited the slaughter-houses to observe the different structures of animals. He studied Hippocrates and was fond of Sydenham. In 1693 he took his degree at the university of Harderwick in Guelderland. He then practiced in Leyden, and was offered the position of physician to the king. This he declined and became a private teacher in Leyden. In 1701 he commenced to lecture on the Institutes of Medicine; his happy manner of illustrating his lectures by the application of chemistry so delighted the students that they asked him to teach them chemistry. He now began to be famous, and in 1703 he was invited to the chair of medicine at the University of Groningen; this he declined, and the curators of the Leyden university were so pleased with his conduct that they gave him an increase of salary, and secured to him as soon as vacant the chief professorship of medicine. In 1709 he became professor of medicine and botany, and in his inaugural address exposed the fallacies of the alchemists and metaphysicians. He now sought to fix the science of medicine on the basis of observation, experiment, and the consequent inferences. So great was his zeal in adding plants connected with medicine that they were obliged to extend the Botanic Garden to twice its original dimensions. So great was he esteemed that in 1714 he was placed at the head of the university as Rector. He was also elected president of the Chirurgical College. In 1718 he became professor of chemistry. He wrote an original work on chemistry. In 1725 he resigned from the Rectorship and delivered an oration on the method of obtaining certainty in physics. In 1728 he was admitted into the Royal Academy of Sciences at Paris, and in 1730 into the Royal Society at London. In 1729 he was attacked with the gout and other illness which compelled him to resign his

professorships of botany and chemistry. In 1737 he was attacked with shortness of breath, and died of hydrothorax on the 23 of September, 1738, being nearly 70 years of age. The city of Leyden erected a handsome monument to his memory.

He was very popular, and all the distinguished persons who passed through Leyden visited him. It is reported that he made Peter the Great wait all night to see him; he made no distinction in his patients, but treated rich and poor alike. He left his only daughter 2,000,000 florins. The doctrines of Boerhaave, rather than forming any new system, embrace the ideas of many earlier systems. He collected and combined that which is good in all. His idea was that disease is that condition in which the bodily actions are disturbed or unsettled, and only take place with difficulty. The reverse of this is health. Fever is the effort of nature to ward off death. Digestion and circulation were explained on mechanical principles. His most important works are his *Aphorisms* and *Institutes*. His books have passed through many editions, and have been published in many languages. He was the first to permanently establish the clinical method of teaching, and it is to his pupils, Haller and Van Sweiten, that its diffusion is due. Of course he had many followers.

167. Give a short sketch of Stahl and his medical system.

George Ernst Stahl was born at Anspach in 1660. He studied at Jena under the great Iatro-Chemist, G. W. Wedel. Graduating at 25, he began lecturing in the University of Jena until after two years he was called to Weimar to hold office as court physician. From thence in 1694 he went to Halle as professor of pathology, dietetic physiology, pharmacology and botany. This was on the recommendation of Fr. Hoffmann. They were for a time on good terms, but became estranged. Hoffmann was the only other medical professor. These two naturally be-

came rivals. For 22 years he taught in this university. At the age of 56 he was appointed court physician at Berlin, which position he held until his death. He was not as popular as Hoffmann. Haller calls him the Sour Metaphysician.

Stahl in his system of medicine makes the soul the supreme principle. It is the anima; not the spirit, but the Nature of other writers. It imparts life to dead matter, is active in generation, both on the side of the father and mother. It provides of itself the body, and counteracts its decay; death occurs only when the soul voluntarily abandons the body to corruption. Ordinarily the soul employs the circulation and the capacity of the parts of the body for contraction and relaxation, as the route and instrument of its influence on the body; so also in disease, where in consequence of the hastened or increased activity of the soul either the pulse or temperature rises, fever sets in, or spasmodic motions and convulsions are developed. Plethora plays a great part; in childhood plethora causes rush of blood to the head, and hence the nose bleed of children, nature's or the soul's way of relief. In youth the blood pressure is on the chest and hæmoptysis is common. From this arise the menses and also the piles. Fever was a salutary effect of the soul to preserve the body. He scorned anatomy and physiology; was the enemy of much learning, and said that good theorists may be bad practitioners. Thus he said that the soul was the subject of emotion and the moving power. It is the same soul or mind that thinks and feels, that is aware of danger and that contrives a means of escape—the same soul that raises the arm to strike or moves the legs to run. It is the living in the body; it stimulates the muscles to contract, and presides over all the secretions. Stahl was very earnest in this remarkable belief; he was a mystic and believed in the absolute truth of his theories. If he were

told that his soul differed in no way from the Archæus of Van Helmont or the Psyche of Aristotle, and was not original with himself, he would become angry and was wont to curse and swear, to deny that he owed anything to the ancients, and to appeal to the direct consciousness of his hearers for the truth of his speech. In therapeutics Stahl believed in the healing power of nature, the *Vis medicatrix naturæ*—the soul. He says: "It is the simple fact that man has his physician in himself, that nature is the physician of diseases and offers a better prospect of curing disease than the most successful apparatus of our art." The soul is the cause of all diseases and cures them all. Therapeutics should act on its movements. If too strong they must be restrained, if too feeble or wanting we must strengthen them or call them forth.

Stahl was very fond of bleeding in order to reduce the movements; he thought it good to bleed twice a year as a preventive measure. He gave purgatives, emetics and alteratives. He would not use Cinchona because it interfered with the fever which was caused by the vagaries of the soul. His doctrine has been called Animism. He had many followers.

168. Who was Hoffmann, and describe his medical system?

Friedrich Hoffmann, son of a physician of the same name, was born at Halle, in 1660, the same year as Stahl. At an early age he showed great love for mathematics, and even before he entered the University of Jena, where he took the degree of Doctor of Medicine in 1681, he had distinguished himself in mathematics. He graduated in his 21st year and went as Physician to Minden; thence he traveled in Holland and England, studying under the direction of Robert Boyle, who was a chemist and an Iatro-mechanical physician. Returning to Germany, he in 1688 was appointed Land Physicus at Halberstad; six years later, he was in 1694 appointed to the newly ap-

pointed University at Halle, as professor of anatomy, surgery and practice, as well as physics and of chemistry. As chemist, he gained great reputation by analysis of mineral waters, and his investigation of etherial oils. In these studies he discovered some special remedies with which he carried on a lucrative business—an anodyne liquor, an elixir viscerale, and a balsam of life. He taught at Halle for 48 years. He was one of the most famous professors of his day, and was remarkable for his easy diction and great amiability. In 1709 he was called to Berlin as physician to Frederick I., but was driven by the jealous machinations of the physicians to return to Halle. He remained there until his death in 1742, at the age of 82. Boerhaave declared that Hoffmann was his equal. Frederick the king sent his tall soldiers to him for treatment, and when Hoffmann's wife died wrote him a letter of consolation, saying that it was better that she should die than himself, as he could do more good in the world than she could have done. Hoffmann was a great writer; an edition of his works in Latin comprises 27 8vo. vols. His principal work is entitled, *Medicina Rationalis Systematica*.

Hoffmann's ideas were very unlike Stahl's. Stahl thought that the soul was the great motive power in life. Hoffmann began not with the soul but with the body, recognizing it as a wonderful machine. He thought that all knowledge is finite, rooted in the senses and limited to what is perceptible by the senses. All final causes are inscrutable. Force is inherent in matter and expresses itself by mechanical movements. In the body forces express themselves by movement as action and reaction, contraction and relaxation, *tonus*. Life is movement, especially movement of the heart; death is cessation of the movement of the heart and as the result of it, putrefaction sets in. Death and life are mechanical phenomena.

Health is due to the regular occurrence of the movements; disease a disturbance of the same. The contractions of the heart, through the blood-vessels, set in motion the circulation of the blood and effect regular secretion and excretion, the phenomena of health. Digestion is the solution of food by means of the saliva and warmth; perspiration an effect of heat alone, and takes place not only through the pores, but through the smallest vessels of the skin. When there was too strong an influx of the nervous aether, or life fluid, spasm was the result; when it was too weak, atony. Plethora was a cause of disease. It was cramp or spasm, relaxation or atony. Spasms may be either general or particular. If general they produce fever, inflammation, hemorrhage, catarrh, etc. If particular, headache, jaundice, melancholy, etc. Relaxation is the source of many diseases, of most all chronic diseases. But spasms pass into atony. These opposites are similar. What produces a spasm in the first place produces its reverse or the state of atony in the second. The primary and secondary effect of all agents upon the human frame are opposite or contrary. Hence from Hoffmann's pathology it results that the two maxims, *similia similibus* and *contraria contrariis*, are identical. The remedy which cures a state of atony is one which produces a contrary effect or a state of spasm. This is the doctrine of *contraria contrariis*.

Hoffmann preferred the use of a few strong medicines to the many used in his day. All medicines were divided into tonics, sedatives, evacuants and alteratives. This classification was accepted by nearly all the medical writers of the eighteenth century. Stahl would have none of Cinchona for fever, but Hoffmann advocated and used it. Not because it cured ague simply, but because it did so as a tonic; the return of the fever paroxysm was owing to weakness or atony, and Cinchona was a tonic, therefore Cinchona cures ague. But see, all tonics do not cure ague,

therefore the hypothesis falls to the ground, and the dictum of Hahnemann arises, that *Cinchona* cures ague because it will cause ague. Hoffmann's medical notions culminated in the following maxim of which he was fond: *Fuge medicos et medicamenta si vis esse salvus* — Flee doctors and drugs if you wish to be well.

169. Give a short sketch of the life of William Cullen.

He was born in the town of Hamilton, in Scotland, April 15th, 1710. He was the second son of a family of 7 sons and 2 daughters. His father was an attorney and factor to the Duke of Hamilton. He received the rudiments at the grammar school of his native town, where he was noted for his aptness and retentive memory. He then went to the University at Glasgow. After a short time there he was apprenticed to Mr. Paisley, a surgeon in Glasgow, a gentleman studious, with a good practice and an extensive library. In 1729 he went to London to further study his profession, and he was afterward appointed surgeon to a merchant ship trading to the settlements in the West Indies. This was the only voyage he made, but he directed his attention to the general effects of diversity of climate on the human constitution, and to observing the diseases peculiar to the West Indies. In his lectures he was afterwards wont to allude to tropical diseases. He returned to London and was in the employ of an apothecary, one Mr. Murray, of Henrietta St., where he turned his attention especially to *Materia Medica*. His father and elder brother being dead, he was compelled to return to Scotland in 1731 or '32, to arrange for the education of his brothers and sisters.

Captain Cleland, with whom he had sailed, engaged him to live at Shotts, and to care for his invalid son. Here he practiced medicine for two years, when he went to live with a clergyman in Northumberland in order to gain information in general literature and philosophy.

The winters of 1734-35 and 1735-36 were passed in attendance on the medical classes of Edinburgh, where regular lectures upon an extended scale had been lately established by Drs. Munro, Rutherford, Sinclair, Plummer and Alston. The pupils formed a society which met weekly to discuss the lectures and other medical matters. Cullen was a member. This was the nucleus of the Royal Medical Society. In 1736 Cullen commenced practice as a surgeon in Hamilton. He was in attendance on the Duke of Hamilton and his family, and other influential persons in the vicinity. He was successful in treating the Duke in a serious illness. Dr. John Clark was sent for and highly approved Cullen's skill. Cullen never forgot this kindness, and on Clark's death in 1757, delivered an oration praising him. At Hamilton he became acquainted with William Hunter. In 1740, Cullen took the degree of M. D. at Glasgow. He married in 1741, and had 11 children. In 1744 he removed to Glasgow, and commenced as a lecturer of medicine, and in 1746 he made arrangement with Dr. Johnstone to deliver a course of lectures on the theory and practice of physic in the University. He also gave lectures on *Materia Medica* and Botany with Mr. Carrick. He also lectured on Chemistry. He was much esteemed, and was thought to be the first physician in Glasgow. But he was independent, and spoke so slightly of Boerhaave that he was called a Paracelsus, a Van Helmont, a whimsical innovator, and the Lord Provost Drummond even requested him to speak respectfully of the Leyden professor. His style of lecturing was easy and from short notes; he abandoned the delivery of lectures in Latin. He was much loved by the students.

His practice at Glasgow was extensive but not lucrative, and interfered greatly with his researches. He determined therefore to leave Glasgow and return to Edinburgh. Dr.

Plummer being attacked with apoplexy, Cullen was appointed to the Chemical chair in 1755, and commenced teaching in 1756. He was thus engaged for 18 years. In 1761, he took Dr. Alston's place as professor of *Materia Medica*. He died February 5, 1790, aged 78.

He was a writer, his chief works being a *Nosological Synopsis*, 1769; *Physiology for the use of the students of the University of Edinburgh*, 1785; *First lines of the Practice of Physic*, 1777; *Treatise on the Materia Medica*, 1789. He taught a union of the doctrines of Hippocrates, Sydenham and Boerhaave. He is said to have supported the widow of Robert Burns, and to have published his poems.

Cullen's system was one of Pathological Solidism. The living solid parts of the body, not the fluids, are taken account of. The chief agents are the nerves. It is a dynamic force, differing from Hoffmann's æther, and Stahl's Soul; he calls it the nerve force, nervous activity, nervous principle, the life-giving element.

This nervous principle produces spasm and atony. The nerves are conductors of brain activity. Everything is effected through the brain and nerves, and everything, including the causes of disease, works upon both of these. The causes of disease are of a debilitating character, but they awaken reaction and the healing powers of nature. Fever is a reparative power of nature, even in the cold stage, and its cause is diminished energy of the brain, often united with a kind of insanity (delirium) due to the spasms of the vessels which produce a reflex acceleration of the heart and stimulation of the arteries. The blood plays no part in fever, which is excited by weakening influences, fright, cold, intemperance, the emanations from marshes, or from human beings. Internal diseases are: Class 1. *Pyrexia*; including fevers, phlegmons, exanthems, hemorrhages. Class 2. *Neuroses*; as *comata*, *adynamia*,

spasms, delirium. Class 3. Cachexiæ, marcores, intumescentiæ, impetigines. Class 4. Surgical diseases. This nosology was the means of great renown in England. He renounced the abuse of bleeding and used simple remedies. He had many followers.

170. What relation had Cullen to Hahnemann?

For us the principal interest in Cullen is that the *Materia Medica* published in 1789 was the one Hahnemann translated into German, and no doubt Cullen's observations on the use and rationale of cinchona in intermittent fever led Hahnemann to experiment and to discover the axiom of nature that cinchona would also produce fever.

171. Give a short sketch of Van Swieten, and his system.

Gerhard Van Swieten was born in 1700, and was a member of a noble Catholic family in the Netherlands. At 16 he went to Louvain university, but soon returned to Leyden and began to study medicine under Boerhaave, whose favorite pupil he became. From overwork he became melancholy and did not graduate until he was 25, in 1725. He received a call to London with an annual salary of £1,000. He remained at Leyden as physician and private teacher, until the death of Boerhaave. When the Duchess Maria of Austria had an abortion he was called, and treated her with such skill that he was by her recommended to the Empress Maria Theresa, her sister, who up to this time had been childless. He gave such advice to her husband as resulted in 16 pregnancies. As the result, he came to Vienna in 1745 as ordinary physician and president of the medical department of Austria. He was also appointed censor, which position caused him much enmity. His chief care was to elevate the medical affairs in Austria. He died in 1772 of senile gangrene. His great work was the *Commentaries on the Aphorisms of Boerhaave*; on this he

labored for 30 years. He also was of great service in improving the treatment of syphilis, in which, like Paracelsus, he recommended mercury.

172. Who was Anton de Haan ?

Born 1704, died 1776, he was the real founder of the Vienna school. The simplest possible treatment, united with careful observation, was the fundamental principle of De Haan and the Vienna school. He believed in acidulated drinks, barley water, oatmeal gruel, absolute diet, cool surroundings, good air. Nature was the healer and not to be disturbed by violent medicines. He would give emetics and cathartics but rarely, and at the right time. He divided diseases into malignant and benign. He embraced hygienic and prophylactic views, and accounted medicine as useful to the state as to the individual. He calculated the gain or loss to the state from the sickness of the citizens. He wrote a treatise on witchcraft, which he defended. His chief work is in 15 vols.

173. Give a short sketch of Johann Kampf.

Johann Kampf (1726-1787) was of Hesse Homburg, in Germany, and he developed a curious theory which he called Infarctus. Kampf understood by Infarctus impacted fæces, which he thought arose from thickening of the humors in the portal vessels and intestines, when the portal vessels became distended by blood delayed in its circulation, stagnated, coagulated, and corrupted. There are two kinds; the black bilious and the mucous. These impacted fæces were from soft as mucus to firm as flesh, or as hard as stone, and they were so dangerous to health that they must be expelled even if it require, for a year, three injections or clysters daily. This theory originated a widespread fashion for clysters, and as Baas says—lords and ladies vied with each other in belaboring their infarctions and in practicing injections. After Kampf's

time others wrote on this subject, and some years ago Dr. Wilfred Hall, a New York physician, published a pamphlet which he sold under vows of secrecy to his patients, at the modest sum of 5 dollars, in which he advocated injections daily of large quantities of water as a cure for many ills and a lengthener of human life.

174. Describe the system of Vitalism, and who invented it.

Vitalism originated in the Montpellier school, and was really invented by one Theophilus Borden, who was born at Bearn in 1722, and died in 1776. His idea was that there was a general life in the body originating from the harmonious working of the individual lives and powers of all the organs. The organs of the body are associated with each other, but each has its definite functions and position, and is a creature within a creature. The most important of these independent organs are the stomach, the heart and the brain. These form the tripod of life, and regulate the life of the other organs. From them proceed sensibility and motion, the two chief phenomena of life by which the animal organism is widely separated from inanimate objects; and this sensibility and motion return to the principal organs after they have circulated through the body. This motion and sensibility is distributed through the body by means of the nerves. The stomach presides over nutrition, the heart propels the blood and chyle through the body. Health is the undisturbed circulation of sensation and motion from and to the centres of the body. But there can be no such thing as perfect health. In pathology Borden laid weight upon the crises; every thing must have a crisis. Borden had nearly as many pulses as a Chinaman; there was the critical and non-critical, a simple critical and compound critical pulse. There was an inferior and a superior pulse separated by the diaphragm; the superior was divided into the nasal, tracheal and thoracic; the inferior, into the gastric, renal,

uterine, seminal, etc. This fantastic theory had many followers. One Paul Barthez elaborated this Vitalism. He thought that vital force was vital principle, and that it was the cause of the phenomena of the life of the human body. Disease is the result of an affection of the vital force.

175. Give sketch of the life of Johann Christian Reil and his system.

Born 1759, died 1813, he elaborated this doctrine of vital force into a system. He thought that the vital force is connected with form, composition, and original diversity of matter, and is an ever-present part of matter. This vital force changes according to age, season, time of day, habits, etc. Each organ of the body has its own special force, but is united by sympathy with the rest of the body. Besides this force existent in, and flowing out of matter, there is nothing else but ideas. The final cause is unknown. To call out vital force, matter demands certain imponderables, as heat, light, electricity, etc. Organic matter possesses the power over inorganic matter of generation and regeneration. The body assimilates foreign matter, and gives it appropriate form. A genus always creates the same genus, and each is immortal. Individuals only change. Reil's theory of fever is recognized to-day by some.

176. Tell something about the belief of Mesmer.

Franz A. Mesmer (1734-1815) proclaimed that a certain magnetic fluid existed everywhere in the world and also in man; and that when one man was over-supplied with this fluid he could impart it to another under certain conditions, and that it had a healing influence on others. In 1774 he published his experiments. In Paris he set up an Order of Harmony, whither flocked all the fashionables; he arranged magnetic

tubs half filled with sulphurated water, and all sorts of compounds. From these vats projected iron rods, on these rods was a ring, and with this the patients joining hands placed themselves in contact. Mesmer, dressed in lilac-colored clothing, played on the harmonicum, touched and otherwise excited the patients. When some lady had what was known as a crisis, but which was really an hysterical tantrum, she was carried to a room known as the crisis chamber, where Mesmer alone had access to her and treated her in private. He became the rage, and gained much money.

177. Tell something about Sir Kenelm Digby's sympathetic powder. (1603-1665.)

It was said that this powder, if applied to the blood-stained garments of a wounded person, would cure his injuries even if he were at a distance at the time. This did wonders in England; the sympathetic powder was powdered blue vitriol.

178. Tell something about Bishop Berkeley's fad.

So learned a man as Bishop Berkeley became enamored with tar water; a quart of tar to a gallon of water, dissolve and strain, and use the water. He thought it would cure everything. He wrote a book on the merits of it in the eighteenth century. It excited the faculty and there was a war of pamphlets on the matter.

179. Who was John Brown, and describe the tenets of the Brunonian system?

John Brown was a Scotchman; he was born at Berwickshire, Scotland, in 1735, of poor parents. In his early manhood he was a teacher, but in 1759 while living in Edinburgh he translated a thesis into Latin for a medical student, and this turned him to medicine. To earn money he continued his translations, composed dissertations in Latin, and held medical quizzes. He was allowed to at-

tend lectures free. In 1761 he became a Fellow of the Medical Society, but is said to have led a rather dissolute life. In 1705 he married, and now opened a boarding and lodging house for students, but was not in very good repute and fell into destitution. Cullen now assisted him, and from his knowledge of Latin, Cullen took him as tutor for his children, and gave him private instructions with his pupils. In 1770 they quarreled, and Brown left him. He now gave lectures in which he advanced his theory, to which he had been led by an attack of gout, that disappeared under the use of stimulants. Soon Brown began to laugh at the doctrines of Cullen and others, boasted, and divided the students into two parties, who were wont to fight with cudgels; he still lived dissolutely, though he held twice the presidency of the Medical Society, and was a prominent mason. He had also the degree of M. D. In 1786 he was thrown into prison for debt, but his students bailed him out. He now went to London and for a time seemed to prosper. He gained reputation and practice, but his habits again led to his downfall, and again he was imprisoned for debt. His pupils again freed him. He died soon after from the effect of opium, to which he was a slave. His chief work is *Elements of Medicine*.

According to Brown, life is not a natural condition, but an artificial and necessary result of irritations constantly in action. All living things tend towards death. He thought all diseases were diseases of excitement or debility; he made a table of diseases so arranged. His irritations were of two kinds—internal and external. To the external belong food, blood, the fluids, warmth, air, etc. The functions of thought, feeling, muscular activity, etc., are to be considered internal irritations which have the same action as external. Health is an intermediate grade of excitement, disease too high or too low a grade. There

were many subdivisions of this theory. His diseases were sthenic or active, strong, exciting, as all inflammatory diseases, and asthenic or weak diseases, those of debility. For the sthenic or inflammatory he practiced bleeding, low diet and purging; for the asthenic, stimuli of various sorts.

Baas says that the Brunonian system sacrificed more human beings than the French Revolution and the wars of Napoleon combined.

180. Who discovered capillary circulation?

Baas says: A bond of union and intermediary system between the arteries and veins, unknown up to this time, was discovered by the great Marcello Malpighi (1628–1694), of Crevalcuore, near Bologna, professor in the university at Bologna. He discovered the capillary circulation (1661) in the lungs and mesentery of frogs, and in 1665 the blood corpuscles.

After Malpighi, William Molyneux, professor at Dublin, observed the capillary current in a lizard (1683), while Anton van Leeuwenhoek (1632–1723) from 1688 made his observations on the larvæ and feet of frogs. Wm. Cowper saw the passage of the arterial into the venous current in the mesentery of a cat in 1687. The capillary connection of arteries and veins was first demonstrated by means of injections and microscopic observations by Dom. de Marchetti (1626–1688) in Padua. But it was best shown by Friedrich Ruysch, a professor at Amsterdam, the inventor of minute injections and a skillful injector.

181. Who revived experimental physiology, and give sketch of his life?

Albert von Haller revived experimental physiology. He was born in Berne in 1708, and was from his childhood a remarkable scholar. In his 10th year he wrote poems in Latin and German, at 15 he went to the University of Tübingen where he gained honor. In 1725 he went to

Leyden to become the student of Boerhaave and Albinus. At 19 he received the degree of doctor, after which he went to England, where he was taught anatomy by James Douglas, who wished to keep him with him. Haller decided to go to Paris to study further. So great was his zeal for anatomy that at Tübingen he dissected dogs, and in Leyden bought for a large sum from Albinus the half of a body. He also engaged in grave robbing, and betrayed by the stench that arose, was obliged to flee. Haller made a botanical trip through Switzerland, and then settled to practice at Berne. He was also a poet and published a collection of poems. At the age of 26 he became professor of anatomy and director of the hospital at Berne; he then caused the erection of an anatomical theatre. In 1735 he became city librarian, but in 1736 went to Goettingen as professor of anatomy, surgery, chemistry and botany. He founded a botanical garden, an anatomical theatre, and the hall of anatomical drawings in Goettingen.

He wrote many books, and it is said that for a long time he was so busy that he slept in his library. He made many important discoveries; he it was who first introduced into Germany the use of the watch in counting the pulse. He may be called the father of modern nerve physiology. He established a system of irritability and sensibility which he applied to the muscular and nervous system, and by whose action the functions of the body were explained.

182. Give an account of the inoculation of man by means of natural small-pox.

It is very old, and is mentioned in the ancient medical book of the Indians. The operation was performed by the Brahmins, who employed pus produced by those who had been a year before inoculated with natural small-pox and also the pus of these secondary inoculations. The

Brahmins traveled about the country to perform this operation, which was done in the spring. Among the Chinese there was pock-sowing, which was practiced as early as 1000 before Christ. They inserted into the noses of children cotton saturated with the variolus pus. The Arabians and Circassians also practiced this. The Africans also. It was practiced among the Greeks, this inoculation with small-pox.

183. Who introduced inoculation into England?

The actual introduction of the practice into England was due to Lady Mary Wortley Montague, who was the wife of an ambassador at Constantinople. In 1717 she had her son inoculated at Constantinople by her surgeon Maitland, and on her return to London, in 1721, the operation was performed on her daughter, both children being at the time 6 years old. These cases were followed by the son of Dr. Keath. In 1721, Maitland undertook to experiment on criminals, and these resulting favorably, the Prince of Wales and the princesses were inoculated by Dr. Mead. The practice soon was adopted in Germany, France, and America, and became very popular.

184. Who discovered inoculation by means of cow-pox?

William Jenner, of Berkeley, Gloucestershire, England.

185. When was this operation first performed?

The inoculation of cow-pox which is credited to Edward Jenner, was really first performed in 1774 by a farmer in Gloucester, named Benjamin Jesty, and next on the children of the farmer Jensen by the schoolmaster Plett, at Starkendorf, in 1792. But it is to Edward Jenner that we owe the extensive spread of this discovery.

186. Give a short sketch of the life of Edward Jenner.

He was born in 1749, in Berkeley, Gloucestershire, and was the father of vaccination. He was the son of a clergyman of the Church of England. Early evincing a taste for

natural history, he was sent after his school education to Bristol, to be instructed in the practice of physic by one Mr. Ludlow. While engaged in assisting Mr. Ludlow, a young countrywoman came to him for advice and said that she could not take the small-pox because she had had the cow-pox. This made young Jenner think, and when he went to London he asked John Hunter, the celebrated physiologist, about it. Could vaccination take the place of inoculation? "Don't think but try," said Hunter. It was somewhere about 1772 or 1773 that he returned to his native country, and settled as a country surgeon in the little village of Berkeley. The following description of his personal appearance is given: His height was rather under middle size; his person was robust, but active and well formed; in his dress he was particularly neat, and everything about him showed the man intent and serious, and well prepared to meet the duties of his calling. "When I first saw him," his friend Edward Gardner writes, "it was at Frampton Green. I was somewhat his junior in years, and had heard so much of Mr. Jenner, of Berkely, that I had no small curiosity to see him. He was dressed in a blue coat and yellow buttons, buckskins, well polished jockey boots with handsome silver spurs, and he carried a smart whip with a silver handle. His hair, after the fashion of the time, was done up in a club, and he wore a broad-brimmed hat. I was prepared to find an accomplished man, and all the country spoke of him as a skillful surgeon, and a great naturalist, but I did not expect to find him so much at home in other matters."

It was to Gardner that Jenner first confided his anticipations of his future fame. In 1780, while they were riding together, Jenner told his friend Gardner all about his discovery, the origin of the cow-pox in the horse, the protection, etc., and said: "Gardner, I have intrusted a very important matter to you, which I firmly believe will

prove of essential benefit to the human race. I know you, and should not wish what I have stated to be brought into conversation; for should anything untoward turn up in my experiments, I should be made, particularly by my medical brethren, the subject of ridicule, for I am a mark they will all shoot at." Jenner made his first vaccination in 1796, on a boy named James Phipps, with matter from the hand of one Sarah Nelmes, who had contracted cowpox in milking. It was in 1798 that he published the results of his experiments in a book entitled: *An inquiry into the causes and effects of the variolæ vaccinæ*. He lived for some time in Cheltenham, and died in 1823, full of fame and honors. He received for his discovery from the Government rewards to the amount of 30,000 pounds or \$100,000. He was so attached to Phipps that he built for him a house, and planted roses with his own hands in his garden.

187. How was real medical science introduced into America?

The introduction of real medical science into America was due largely to the influence of the British physicians who came over with the troops in the war of the revolution. Throughout the 18th century the standard of medicine had been gradually elevating itself, but it was not until the foundation of the medical schools in New York and Philadelphia, about the middle of the century, that medical science made real progress. There were physicians, of course, long before this, the best of whom had received their education abroad. In the earlier settled parts of America, as in New England, the clergy were both physicians and ministers. Men high in office, as governors of provinces, devoted attention to medicine. Midwifery was in the hands of women.

188. When was a body first dissected before medical students in America?

As early as 1750, Dr. John Bard and Dr. Peter Middle-

ton injected and dissected before a class of students, a criminal which had been delivered to them.

189. What was the status of American medical students in the eighteenth century?

In the eighteenth century there was a system of apprenticeship in vogue in our colonies. Medical students were apprenticed to some surgeon for from three to seven years. The pupils were often obliged to perform the most menial services. Indentures were signed. At the end of the term the young doctor was given a certificate and turned out to practice.

190. Tell something about the special courses of lectures on medical subjects delivered at this time.

In 1647, Dr. Giles Firman, of Boston, gave anatomical lectures. Probably the first in the United States. Dr. Thomas Cadwallader, of Philadelphia, gave anatomical lectures in 1750. In 1752, one Thomas Wood, a surgeon of New Brunswick, advertised in the "New York Weekly Post Boy" a course of instruction on osteology and myology. Dr. William Shippen, Jr., went to London and studied under Dr. William Hunter; he graduated at Edinburgh in 1761, and returning to Philadelphia, delivered, in the winter of 1762, a course of lectures in this city on anatomy and midwifery. He had a class of 12. Dr. Shippen's lectures were continued until 1775, when the war interrupted them. He became an army surgeon and director general of the army hospitals. He was the first public teacher of midwifery in this country.

191. Give an account of the founding of medical colleges in America in the eighteenth century.

In 1765, Dr. Morgan returning from Europe laid before the trustees of a literary college of Philadelphia, a plan for the institution of medical professorships in connection with the college. This plan was adopted by the trustees,

and Dr. Morgan was given the chair of theory and practice. Dr. Shippen was chosen professor of anatomy and surgery. In 1767 rules were adopted for the establishment of the new medical school; in 1768 Dr. Adam Kuhn was appointed professor of materia medica and botany, and Dr. Thos. Bond of clinical medicine. In 1769 Dr. Benj. Rush was appointed to a chair of chemistry.

In 1767 the Medical Department of King's College of New York was organized, and lectures commenced on the 1st Monday in November, 1767.

On May 16, 1769, the degree of M. B. was conferred on Robert Tucker and Samuel Kissam. The first regular degree of M. D. in the United States was conferred on Samuel Kissam, in March, 1770, by King's College (now Columbia University). During the War of the Revolution all instruction ceased in King's College, its buildings being used as hospitals.

The medical department of Harvard University was founded in 1783 through the efforts of Dr. John Warren, who became professor of anatomy and surgery.

Dartmouth Medical School was founded in 1798.

192. When and where was the first medical college commencement held in America?

On June 21st, 1768, a medical commencement was held for the first time in America, the degree of Bachelor of Medicine being conferred on 10 persons. This commencement was held in Philadelphia and was the first of the medical school at the University of Pennsylvania.

193. When and where was the first general hospital in the United States chartered?

The first general hospital chartered in the Colonies was the Pennsylvania Hospital, which was organized in 1751, with a medical staff of six. In this Dr. Thos. Bond gave the first clinical instruction in America.

194. When was the first hospital established in New York?

In 1773 the corner-stone of the New York hospital was laid. The hospital was not put in operation until 1791.

195. When and where was the first insane asylum established?

The first asylum for the insane was established in Williamsburg, Va., in 1773.

196. Give an account of the state of medicine as practiced in America during the eighteenth century.

Dr. Rush declared that Boerhaave in 1760 governed the practice of every physician in Philadelphia. Then came Cullen. And then Rush set the medical practice by a sort of modified Brunonianism. The favorite remedies of Rush were venesection and calomel; he called calomel the Sampson of the *Materia Medica*, and his opponents said that this was indeed true, since it had slain its thousands.

Practical anatomy began to be studied from about the middle of the eighteenth century. Bodies of criminals were furnished by the authorities for dissection, but the chief supply was by grave-robbing. But the people were terribly prejudiced against the dissection of the human body, and in 1778 there was an uprising of the people against the doctors, known as the Doctors' mob, which lasted two days. The same year the body of an executed criminal which had been given to the physicians for dissection by the authorities at Baltimore, was forcibly taken from them by the excited people. Secret dissections were performed in Harvard College as early as 1771, twelve years before the founding of its medical department, but dissection was by the law of Massachusetts, at that time and for 60 years after, legal felony.

During the whole of the eighteenth century most of the physicians prepared their own medicines. In the cities the apothecaries also practiced medicine.

Dr. John Morgan in 1765 was the first to advocate the

separation of the duties of the physician and pharmacist. The pharmacopœia followed was the London, or Edinburgh Dispensatory. The first American Pharmacopœia was published in Philadelphia in 1778. Its author was William Brown. It was in Latin, and was intended for use in the Continental Army.

It has been said that this period of American medical history was filled with quacks. In 1720 Dr. Douglass was the only practitioner in Boston who had been regularly graduated; yet there were other reputable practitioners.

In 1757, William Smith in his history of the province of New York says: "Few physicians among us are eminent for their skill. Quacks abound like locusts in Egypt, and too many have recommended themselves to a full practice and profitable subsistence. This is less to be wondered at as the profession is under no kind of regulation. Loud as the call is, to our shame be it remembered we have no law to protect the lives of the king's subjects from the malpractice of the pretenders. Any at his pleasure sets up as a physician, apothecary, or surgeon. No candidates are either examined or licensed, or even sworn to fair practice." Toner says that there were about 3,500 practitioners in the United States in 1776; of these not more than 350 were possessed of a medical degree.

197. Describe the metallic tractors of Elisha Perkins.

Born at Norwich, Ct., in 1740, he had practiced his profession with good reputation for many years, when he fell upon a course of experiments leading to his great discovery. He conceived the idea that metallic substances might have the effect of removing disease if applied in a certain manner. It was about the time when Galvani had made his discoveries, and had found what is now known as galvanism. In 1796, Perkins promulgated his notion in the shape of metallic tractors. These tractors were two pieces of metal, one seemingly iron, the other

brass, about three inches long, blunt at one end and pointed at the other. These instruments were applied for the cure of certain complaints, as rheumatism, local pains, inflammations and even tumors, by drawing them over the affected part very lightly for about twenty minutes. Dr. Perkins took out a patent for his discovery, and traveled about the country with them. He soon gained many advocates. In 1798, the tractors had crossed the Atlantic, and were used in the Royal Hospital at Copenhagen. About the same time the son of the inventor, Mr. Benjamin Douglas Perkins, carried them to London, where they soon attracted attention. The Danish physicians published accounts of their cases, with instances of cures, in a large 8vo volume. In 1804, an institution was established in London called the Perkinian Institution. It is said that Mr. Benj. Perkins in a half dozen years made more than £10,000 by this humbug.

In 1803, one Thomas Green Fessenden, a native of Vermont, but living in London, published a most caustic satire on Perkins and his tractors, called *Terrible Tractoration*, a poetical petition against galvanizing trumpery and the Perkinistic Institution, and signed the name of Christopher Caustic, M. D., LL. D., A. S. S. This was followed in 1804 by an American edition. This craze was short lived, and by 1811 was abandoned.

198. Give a short sketch of some of the medical theories of the eighteenth century.

Among the theories was that of Johann Andreas Roeschlaub, born 1768, died 1835. It was an improvement on the theories of John Brown, or Brunonianism, and was called the theory of excitement. According to him life depended on excitability or rather irritability which is inherent in the organism as an independent capacity. Bodily health consists in moderate irritation and moderate excitability. Disease is a deviation from this condition.

He had many followers, among them were Niemeyer, Kurt Sprengel, Marcus, Horn, Van Hoven, Henke, and many others. Opposed to this theory was Hufeland, the friend of Hahnemann, and the publisher of Hufeland's *Journal*, in which Hahnemann published his first announcement of his discovery of homœopathy.

Another offshoot of Brunonianism was the theory of Rasori of Milan. This theory was called stimolo and contrastimolo. This was only a new sort of Methodism. He proclaimed a diathesis stimolo like the sthenic or active diathesis of Brown; the status strictus of the old Methodists, and the diathesis contrastimolo—the asthenic or low diathesis of Brown, the status laxus of the Methodists.

Then there was the doctrine of phrenology, called by Gall, its originator, organology, and by others craniology. Gall was born in 1757, died 1828, expounded his theory in Vienna as early as 1796, but did not publish anything upon it until 1810. Spurzheim was his pupil, and in 1813 he introduced it into England, where he remained about five years. He then came to America in 1832, but died in Boston in November of that year. An important theory was that of Broussaism. Francois Joseph Victor Broussais (1772–1838), promulgated a mixture of the doctrines of Brown, Pinel, Bichat, Hoffmann, Stoll, and Marcus. Life, according to him, depends on external irritation, especially that of heat. Heat excites in the body chemical processes, which maintain regeneration and assimilation, contractility and sensibility. When these functions supported by heat cease, death ensues. He starved his fever patients, and put on their abdomens many leeches. Leeching was his weakness.

199. What are the great divisions in medicine at the present day?

Medicine has now divided itself into three great schools; the Homœopaths, the Eclectics, who take good where they

can get it, and the Regulars, who object to anything but the name of physician, and who are popularly known as Allopaths.

200. Give an account of the School of Natural History in Germany in the eighteenth century, and of its founder.

About 1830 there arose in Germany a School of Natural History which lasted but twenty years. The writers of this school devoted themselves especially to clinical textbooks, and it was this school that really opened the way to clinical instruction in Germany. The creed of this school was: The physician should be filled with a pious reverence toward nature. The organism is a whole and must be contemplated so. Our art is in many cases useful, but it is also in many cases harmful. This school borrowed fancies from many schools, from Sydenham to Paracelsus, and it not only fostered the old Hippocratic ideas of diagnosis and method, but it also cultivated the physical and microscopic diagnosis adopted by the French. This school gave a momentum to microscopic investigation, so that Virchow, one of its followers, founded upon it his cellular pathology, and the microscope became of paramount importance in pathology and pathological anatomy. It also adopted chemistry. It was of great service in formulating a new and improved system of therapeutics. The founder of this school was Johann Lukas Schoenlein, (born 1793, died 1864,) of Bamberg in Germany. He was a very celebrated teacher, and was greatly beloved and sought after by the young medical students. He taught at Wurzburg.

201. Describe the Parasitists.

A branch of the school of Schoenlein or of Natural History was called the Parasitists; this Section thought that diseases were genuine second organisms in the diseased body, generated, developing and dying at last of them-

selves through the activity of the mother organism, or by the power of drugs. In cases of recovery they were cast out of the body like corpses of the disease, and they could even be sick in themselves. Schoenlein was the first supporter of the parasite theory of disease.

202. Who was Baron von Rokitsansky, and what did he do for pathological anatomy?

Born in Bohemia in 1804, died 1878. He made a revolution in the study of pathological anatomy, and he studied it from bodies; he had yearly the disposal of from 1500 to 1800 human bodies, and the results and appearances of diseased tissue were very thoroughly studied. He paid but little attention to microscopy, devoting his time to pathological anatomy.

203. Who elaborated Physical Diagnosis?

Joseph Skoda (born 1805, at Pilsen, died 1881) adapted the laws of physical diagnosis to physical laws, overthrew the pathognomonic arrangement of sounds of the French school, as gastric sound, thigh sound, cavernous respiration, and substituted categories of sonorous phenomena based upon the physical constitution and configuration of the organs and tissues. He made the art of diagnosis assume a really scientific base.

204. Give sketch of Hebra and his system.

Ferdinand Ritter von Hebra, of Brünn in Moravia, born 1816, died 1880, opened new methods in the diagnosis, therapeutics and classification of skin diseases. He studied in Vienna, graduating in 1841. He became assistant to Skoda, receiving charge of the division of patients suffering from the itch. In 1842, having already given private instruction, he obtained permission to lecture. A special section of diseases of the skin was given him, over which he presided as professor from 1849. His lectures became very popular. He published several books on the skin.

Pathological anatomy was the foundation of Hebra's system. He classified skin diseases into 12 sections. He thought that most skin diseases were local in character, yet did not exclude entirely a constitutional basis for them. He prescribed simple local treatment as distinguished from the general treatment of skin disease previously existing. He also paid attention to the nature of each case. Hebra accepted the itch mite as the cause of the itch, following Wichmann. He believed in the recession of eruptions, their disappearance being due to their absorption by some internal disease. He used mercury largely in the treatment of syphilis.

205. Give short sketch of Rademacher and his system.

John Gottfried Rademacher was born 1772, and died 1849. He practiced at Hamm on the lower Rhine, became in love with the doctrines of Paracelsus, and studied them very carefully and faithfully. The teachings of Rademacher are based on a saying of Paracelsus: "A natural genuine physician says this is a morbus helleborinus, turpenthinus, not this is a phlegma, choryza, catarthus."

Rademacher thus classified diseases in accordance with the remedies which experience proves curative in each. His system is empirical. We cannot distinguish the ultimate essence of disease, its origin and issue in the organism, but we learn by experience to use and to know the remedy which has accomplished its cure, and we should name the disease after this remedy. According to Rademacher, there are three universal remedies: cubic nitre, copper and iron. Also three primary diseases of the body in general: the cubic nitre disease, copper disease, and iron disease. These three primary diseases do not always remain such; they throw an organ into a state of sympathy, and an iron disease may result in consumption, mania, etc. A copper disease may result in worms,

paralysis, jaundice, etc. Of course this disease theory had many modifications.

206. Who is the father of the water cure ?

Vincent Preissnitz. It became a prominent theory in Germany in the early part of the nineteenth century. All diseases could be cured by cold packs, cold baths, frictions with cold water, etc. This system was also introduced into the United States, and there are to-day certain establishments for the cure by water.

207. Give a short sketch of Hans Burch Gram.

He was born in Boston in the year 1786. His father was the son of a wealthy sea captain of Copenhagen, Denmark, and while yet a young man he was private secretary to the governor of Santa Cruz. While he was making a tour through the United States in 1782, he met a young lady of Boston, one Miss Burdick, whom he married. His father disinherited him, and giving up his secretaryship, he settled in Boston. The son who was born to them was destined to exercise great influence in the medical history of the time.

Hans Burch Gram, who introduced homœopathy into the United States, remained in Boston until his 18th year, when both his parents having died, he went to Copenhagen to look after the estate of his grandfather, the sea captain, who had died previously. He partially succeeded in gaining his fortune. One of his uncles was king's physician, and at his wish young Gram entered upon the study of medicine. He graduated at Copenhagen in 1814, with the degree of C. M. L., the highest of three grades. He soon commenced to practice in Copenhagen, and became very successful. At 40 he had gained a competency, and was able to assist the younger members of his family who had remained in America.

About 1823 Gram became acquainted with Homœopathy,

tested it carefully on himself, and became convinced of its truth. His thoughts now turned to the land of his birth—America, and in 1825 he returned to this country, landing in New York. Not long after his arrival, by endorsing notes for his brother, he lost his entire property, and was compelled to seek a living by the practice of medicine.

Some time after his arrival he translated an essay of Hahnemann that had been published in a German newspaper of March, 1813, and afterwards in vol. 2 of the 2d edition of the *Materia Medica Pura*. It was called “Spirit of the Homœopathic Healing Law,” and was published in the form of a letter to Dr. Hosack, a prominent New York physician, and at the time president of the New York College of Physicians and surgeons, and professor of theory and practice. This pamphlet was gratuitously distributed among the leading members of the profession throughout the country, and especially in the medical schools. But Gram had been long away from the country; his English was poor, and his twenty years in Denmark gave to the little pamphlet of twenty-four pages such a grotesqueness of Danish-German-English, and so complicated a grammatical construction that it was difficult to read, and it is said that few succeeded in understanding it. Dr. Hosack confessed that he had not been able to read it.

This reception of a great truth with ridicule and indifference, where the enthusiastic man hoped that the people of the Land of Freedom would be more liberal, disgusted Gram with authorship; he never wrote any thing else. This pamphlet of Gram was the first thing printed on Homœopathy in the United States.

Gram resided with his brother, Neil B. Gram, at 431 Broome St., N. Y. He was a freemason and as an officer of Jerusalem Chapter No. 8 he had assisted at the raising of Dr. R. B. Folger, on May 25th, 1825. The two physicians soon became very intimate. Dr. Gram loaned to

Dr. Folger a manuscript article on the Pharmacodynamic Properties of Drugs. This Folger lost. It was not long before Gram asked Folger to allow him to treat some of his chronic cases with homœopathic medicine in order that he (Folger) might see that there was truth in the new system. To this Folger assented, and the cases that Gram took were speedily relieved. Folger became convinced of the truth of Homœopathy, and though he was from his ignorance of the German language at first almost entirely dependent on Gram, yet he soon with his help was able to read the *Organon* and the *Materia Medica Pura*.

At that time none of Hahnemann's writings had been translated into English; all the pioneers of American Homœopathy had first to learn German in order to read the writings of the master.

In 1827, Dr. Folger commenced to practice Homœopathy, and it is said that not feeling confidence in his own knowledge of the new doctrine, he took Gram with him when he visited his patients. On account of ill health Folger was compelled to go South in January, 1828, and he did not afterwards practice medicine.

John F. Gray says of those first days of Homœopathy: "Next in chronological order to Gram, I entered the lists in the study of Homœopathy." Gram failed in health completely just as the new period began to dawn upon us. Broken in heart by the misfortunes, insanity and death of his only brother, upon whom he had lavished all the estate which he had brought from Europe, he was attacked with apoplexy in 1838, and after many months of suffering he passed away in Feb., 1840. He was an earnest Christian of the Sweedenborgian faith, and a man of the most scrupulously pure and charitable life I have ever known. In the presence of want, sorrow, and disease, secluded from all observation of the outside world, he ministered with angelic patience and with divine earnest-

ness. The squalid hovel of the sick poor was to Gram ever the most holy temple of religion; its atmosphere consecrated his whole soul to the strongest exertion of his many-sided wisdom, the most perfect and potent application of his painstaking art. He was buried in St. Mark's Burial Ground between 11th and 12th Sts., New York, but on September 4th, 1862, his old time friend and pupil, Dr. Gray, removed his remains to his own lot in Greenwood Cemetery.

208. Who was the first American student of Homœopathy?

A. G. Hull. Born in New Hartford, 1810. Educated at Union College, Schenectady, graduating in 1826. Graduated from Rutgers Medical College in 1832. He studied botany with Gram, and Gram dictated a course of anatomy to Hull in Latin, which he also recorded in Latin. He also was of the first circle of homœopaths of New York City. He edited, with Dr. Gray, the *Homœopathic Examiner*, and also several volumes of *Jahr's Manual*. He died April 25, 1859.

209. When and how was Homœopathy introduced into Pennsylvania?

About 1825 Dr. William Wesselhoeft, a graduate of the University of Jena, a pupil of the philosopher Von Schubert, a friend of the poet Gœthe, and of Jahn, the father of modern gymnastics, and of the celebrated Dr. Follen, came to Pennsylvania and located at Bath, in Northumberland county. Dr. Henry Detwiller, coming from Switzerland in 1817, had located at Hellertown, near by, and Dr. Eberhard Freytag had long been practicing in Bethlehem. These regular practitioners often met, and one day Dr. Wesselhoeft mentioned that his father had sent him a German Organon from Germany, that he had received letters from Hahnemann, and that his father had sent him a box of homœopathic medicines prepared by

Dr. Stapf. So these educated men talked of the new doctrine.

210. When, where, and by whom was the first dose of homœopathic medicine prescribed in Pennsylvania, and describe the circumstances?

To Dr. Henry Detwiller is due the credit of giving the first dose of homœopathic medicine in Pennsylvania. A patient that had been for some time under treatment for dysmenorrhœa without success, was on July 23, 1828, given a dose of *pulsatilla*, which speedily cured her.

211. Describe the growth of Homœopathy in Pennsylvania.

In 1828 Dr. Eberhard Freitag, at that time 60 years of age, and who lived in Bethlehem, Pa., joined Drs. Detwiller and Wesselhoeft in studying and practicing the new therapeutics. About the same time the Rev. Christian J. Becker, of Kridersville, who had been partly educated for the medical profession, became interested in the subject and took part in the discussions. In 1830, Dr. John Romig joined them. The frequent meetings of this band of men culminated in the formation of the Homœopathic Society of Northampton and Adjacent Counties, August 23, 1834.

In 1829 an epidemic of dysentery broke out in the neighborhood, and Dr. Wesselhoeft was so delighted with his success with his treatment that he abandoned entirely the allopathic practice and gave himself entirely to homœopathy. He gave up a large and lucrative practice, and for a year treated all the cases that came to him free, wishing to learn the new *Materia Medica* and Institutes. He established offices in Bath and in the surrounding towns, where he invited the sick to come for treatment, devoting a part of each day in the week to these places; he thus held free clinics. He taught the clergymen, that in his absence they might be able to prescribe; one can well understand that after the calomel and bleeding of the old school, this

religion of medical aid without aggravation and to cure quickly and easily, must have appealed to the hearts of the people.

212. Give sketch of Dr. Hering.

Dr. Constantine Hering, born in Oschatz, Germany, January 1, 1800, was a scientist, a poet, author, novelist, and thinker, a man of whom it was said that his brain had as many facets as a diamond and from each of them scintillated originality. Hering in his youth did not believe in Homœopathy; in 1820, and when he was twenty years of age, he had gone to Leipzig, where he had studied seven courses of medicine. From there he went to Wurzburg, where he sat at the feet of that master of pathology—Schoenlein. From 1817 to 1826 the life of Hering was that of the German student—his comrades called him Wisent on account of his close application to study. He was poor, and his privations were many. About 1821 or 1822, Baumgartner, the Leipzig publisher, asked Hering to write a book demolishing Homœopathy; this was about the time that Hahnemann was driven from Leipzig, and it was thought that such a book would finish up Homœopathy. The book was written during the winter of 1821–22 and was nearly completed when, for the sake of making quotations, Hering was provided with Hahnemann's works. In the 3d vol. of the *Materia Medica Pura* he found the Note to my Critics; it led him to experiment—the book was dropped—against the advice of all his friends he continued his investigations and in two years he was a believer in homœopathy. He was a homœopath when he was with Schoenlein, and his examinations were much harder in consequence. As early as 1824, Hering was in correspondence with Hahnemann, though they never met; Hering told Dr. Raue that when he was in Leipzig in 1820 he saw Hahnemann walking out with his daughters and wife, but never spoke to him;

at that time he did not believe in Hahnemann. Hahnemann went to Coethen, and Hering, in 1826, almost at once after his graduation, was sent out to Surinam in South America as a naturalist by the government of Saxony. He remained six years in Surinam.

The pages of the Archives, Stapf's journal, are full of Hering's provings of medicines. And Lachesis is due to our Hering; he first made proving of the Lachesis trigonacephalus, employing Indians to bring him the snake from which he took the venom.

But the Government became aware that Hering was actively furthering the cause of Homœopathy, so he was ordered to stop all attention to it, and devote himself to his naturalist duties entirely. This unjust censure induced him to throw up his commission. He had already sent his student, Dr. George Bute, north the year before to treat the cholera cases by the homœopathic method, and in 1832 Dr. Bute had charge of a hospital on Cherry street, where he treated the cholera very successfully in accord with the tenets of Hahnemann. Hering sailed for home, and on his way was wrecked on the coast of Rhode Island. The ship in which he sailed was bound for Salem in Massachusetts, but she was a worn-out tub and went ashore on the Rhode Island coast, and finally put into Martha's Vineyard. Here on a Sunday morning in January, 1833, Hering landed. He came to Philadelphia almost at once. He was well-known by his writings as one of the stalwarts. It was not long before he had called about him a little circle of physicians and laymen who were interested in Homœopathy. He died July 23, 1880.

213. When and where was the first Homœopathic Society founded in Pennsylvania?

On April 10th, about three months after Hering had landed, and on the birthday of Hahnemann, a Society was founded in Philadelphia, the first Homœopathic

Society in America, the Hahnemannian Society, and a week later Hering stood up and told the story of Hahnemann and Homœopathy. In this address he said: May our beneficent society largely contribute to the wider prevalence and reception of Hahnemannian doctrines; may that which single individuals can of themselves scarcely achieve, be effected by united efforts; then in this blessed country may the miseries of disease be diminished, future generations be rescued from its leaden fetters, the bitterest human misery, disease bearing down all earthly joy, become less from year to year, and the sweetest boon on earth, health and domestic felicity, become the portion of growing thousands here as well as in Germany.”

214. Give an account of the formation of the Northampton Homœopathic Society.

On August 23d, 1834, another society was formed. Freytag, John Romig, Detwiller, Becker, Pulte, Bauer, Wesselhoeft, Gosewich, Wohlfarth, Reichhelm, all the Northampton county men, met and formed the Northampton County Homœopathic Society.

215. Give an account of the formation of Allentown Academy.

A few months after the formation of the Northampton Society, Drs. William Wesselhoeft, Henry Detwiller and John Romig, journeyed down from Bath and Allentown to Philadelphia, and became the guests of Dr. Hering at his home on Vine street. And on the first day of January, 1834, they celebrated Hering's 35th birthday by organizing or talking of a plan, the outcome of which was the first Homœopathic College in the world—the Allentown Academy. This institution was called the North American Academy of the Homœopathic Healing Art. Hering was the principal instructor; he agreed to remove to Allentown and assume charge.

A stock company was formed to raise money for the building and lot; about 100 subscribers were obtained

from Allentown, Bethlehem, Philadelphia and New York. A square was bought in Allentown bounded by Hamilton street on the North, Walnut street on the South, Fourth street on the East, and Penn street on the West. Two wings were erected each three stories high, and a two-story building was built for a chemical laboratory, anatomical and dissecting rooms, and a botanical garden was also laid out. On May 27, 1835, the corner-stone was laid for the two wings of the main building in the presence of a large concourse of people. Dr. Hering delivered in the Court House the inaugural address in German. By Act of Legislature, June 17th, 1836, the North American Academy of the Healing Art was incorporated. Of the faculty Dr. Hering was president; the members were William Wesselhoeft, Henry Detwiller, Eberhard Freytag, John Romig; later J. H. Pulte became a member. The course was from November 1 to August 21. Instruction was in German. But through the machinations of the enemies of Homœopathy the lectures were continued but a few years, the buildings were sold to satisfy a mortgage, the moneys it is said were stolen by certain people; the last meeting of the directors was in 1842, diplomas were granted until that period. The buildings are still standing; for some years they were used as a young ladies' school, but are now used as school houses.

216. Name some of the pupils graduating from Allentown.

It was from the students who graduated at Allentown that the spread of Homœopathy in the United States really began. The pupils were Adolph Bauer, A. G. Schmidt, J. W. Baker, L. Zeigler, J. C. Gosewich, A. H. Okie, Gustave Reichhelm, Chas. Haseler, Major Fehrenthal J. Geist, Edward and Adolph Caspari, Ad. Lippe, Chas. Neidhard, Wm. Schmoele, Geo. Bute, and Henry Floto.

217. Describe the founding of the Homœopathic Medical College of Pennsylvania.

After the closing of the Allentown academy the only way for the homœopathic student to receive a degree was to graduate from an allopathic college; but in 1846 the American Medical Association passed certain rules by which the student who was of the homœopathic faith was not allowed to graduate. So there was danger of Homœopathy coming to a standstill in the United States, and of the same obstacles being set up here as in Germany. One evening in February, 1848, there met at the house of Dr. Jacob Jeanes, situated on the northwest corner of Juliana and Vine streets, three men, Constantine Hering, Walter Williamson, and Jacob Jeanes.

They met to discuss the advisability of starting a Homœopathic College in Philadelphia. It looked a dubious undertaking; would students leave the halls of the old colleges? Some were opposed to the plan, thought it was too soon; the physicians of the city discussed it when they met. The college was chartered in 1848. It is still in operation. From the little room in the rear of 635 Arch street, where the first lectures were delivered, to the great pile of brick and stone, on the wealthiest street in Philadelphia; as well equipped in all the things by which men are taught to combat disease, as any institution in the country.

218. When and where was Hahnemann born?

Samuel Christian Friedrich Hahnemann, the founder of the system of medicine believed by many people to be the only system based upon an unchangeable law, and which is known as Homœopathy, was born near or a little after midnight on the night of April 10, 1775, at Meissen, a small town in Saxony. Madame Suss, his daughter, writing of the date of his birth to a German journal in 1757, says that she has often heard her father say that he

was born late on the evening of April 10th, but that his mother gave notice of it early on the morning of April 11th, and it was so recorded on the church register.

219. Describe his early life at home.

Young Samuel's father was an artist, and at that time engaged in painting upon porcelain in the manufactory at Meissen. He was possessed of ability, and had even written a book on water color painting. In an autobiography written in 1791, Hahnemann tells us that his father had the soundest ideas upon everything that was worthy, and that he ever sought to implant the same upon the mind of his son. Even when Samuel was but five years of age, the boy was taking lessons in thinking from his father, who set apart a certain time daily for that purpose. At a very early age our lad was placed at the village school, where he soon excelled. It was a favorite habit of his boyhood to wander over the beautiful hills of Meissen, and he early evinced a taste for the study of plants, and, it is said, made an herbarium. When he was twelve years old his good master Muller intrusted him to teach the rudiments of the Greek language to the other pupils. About this time his father wanted to take him from school, and after the manner of the thrifty German fathers of the day, set his son at work, but Magister Muller, the principal, of whom Hahnemann ever spoke with love, and the other teachers, entreated the father and offered to remit the tuition, so that the bright and studious lad might continue his education. When he was 16 years of age he entered the Meissen private school, that of Afra, of which Muller was the rector. The father looked with little favor upon all these years passed in school-life, and several times took his son from the school only to be compelled to let him return. Once he apprenticed him to a grocer at Leipsic, but young Sam ran away and returned to his home, where his mother concealed him for several

days until the irate father's heart had softened. It is also related that the father objecting to the waste of midnight oil, the son fashioned a rude lamp from clay and hid himself with his books at night in some out-of-the-way nook in the rambling old Eck-house.

220. Describe the circumstances of his leaving home.

At last the father began to realize that there was something in this country-bred lad of twenty, this eccentric son of his, who already knew Latin, Greek, Hebrew, History, Physics and Botany, and whom nothing in the way of opposition could deter from knowing, that he ought no longer to attempt to curb. And so when he was 20 years of age, in 1775, Hahnemann, the student, received from his father about twenty dollars with permission to journey to Leipsic, the University town, and to win his way in his own manner. This was the last help his father ever gave. But it must be remembered that the father was possessed of a large family, and that he was poor.

221. Describe his life from 1775 to 1779.

He began the student life in Leipsic by attending lectures during the day, and devoting the nights to translations from English into German; he also taught German and French to a rich young Greek from Jassy. A generous citizen of Meissen had presented him with free tickets to the medical lectures, but his literary occupations were such as to hinder him from attending them regularly, but he studied hard, and saved his money that he might soon go to the advantageous medical schools at Vienna. But soon after he went to Vienna he was, by the treachery of a friend, defrauded of a large portion of his savings, so that at the end of nine months, during which time he was obliged to live upon a little more than 68 florins, he was compelled to seek for a self-supporting position. But the way was provided by Providence for the poor student in

the person of a celebrated physician, Von Quarin, who was physician to Maria Theresa and the Emperor Joseph. He assisted the young Saxon scholar, who thus spoke of him many years later: "He respected, loved and instructed me as if I had been the first of his pupils, and even more than this, and he did it all without expecting any compensation from me. To him I am indebted for my calling as a physician. I had his friendship, and I may almost say his love, and I was the only one of my age that he took with him to visit his private patients."

Von Quarin secured for Hahnemann the position of private physician and librarian to the Baron von Bruckenthal, who was Governor of Siebenburgen, and who lived in the city of Hermanstadt. For a year and nine months he remained in the delightful seclusion of Von Bruckenthal's great library filled with priceless books and manuscripts.

He catalogued his collections of rare coins and also the books, and arranged them; and he studied them. He was all the time studying, making ready for the future that as yet he dreamed not of.

When Hahnemann left Hermanstadt, he was master of Greek, Latin, English, Syriac, Arabic, Spanish, German, and a little Chaldaic. And he was only twenty-four years of age.

222. Tell something about his life in the year 1779.

He bade the good baron good-bye in the spring of 1779, and went to the University of Erlangen to take his degree as Doctor of Medicine, choosing Erlangen because the fees were less than at Vienna. At this place he successfully defended his thesis on the 10th of Aug., 1779, and received his diploma.

223. Describe his marriage.

From the time of graduation in August, 1779, until

somewhere in the year 1780, it is likely that Hahnemann wandered about in the towns of Lower Hungary. In the summer of 1780 a home longing overcame him, and he returned to Saxony, locating in the little town of Hetstadt, in a copper mining country, where he found little to do but study the mining. He remained there for nine months, going thence to Dessau in the spring time of 1781. At Dessau he first turned his attention to chemistry, of which he afterwards became one of the most able exponents and experimentalists of the time. Here he also gained much knowledge of practical mining and smelting, which knowledge he afterwards utilized in writing of the subjects. And, as he so quaintly observed, "I filled the dormer windows of my mind."

Apothecary Haseler succeeded apothecary Kuchler in business at Dessau, and he also married his widow, who was blessed with a young and charming daughter—Johanna Henrietta Leopoldine Kuchler—and in her Hahnemann found his life companion. They were married at Dessau on Dec. 1st, 1782. He was 27, she 19, years of age.

224. Name some of the towns Hahnemann lived in from his marriage to 1810.

Gommern, Dresden, Leipsic, Georgenthal, Molschleben, Pyrmont, Wolfenbittel, Konigslutter, and Hamburg, Altona, Mollen, Eilenburg, Machern, Wittenburg, Dessau, Torgau.

225. How was his attention called to Homoeopathy?

Soon after his arrival at Leipsic, 1790, and while he was translating from the English the *Materia Medica* of the great Scotch physician, William Cullen, he was led by certain statements in the book to make some original experiments regarding the effects of Peruvian bark upon himself. As a result, he added a foot-note to the second volume of his translation, in which among other things he

stated: "I took by way of experiment, twice a day, four drachms of good China. My feet, finger's tips, etc., at first became cold, I grew languid and drowsy, then my heart began to palpitate, and my pulse grew hard and small, intolerable anxiety, trembling (but without cold rigor), prostration throughout all my limbs; then pulsations in my head, redness of my cheeks, thirst, and, in short, all these symptoms which are ordinarily characteristic of intermittent fever, made their appearance, one after another, yet without the peculiar chilly rigor. This paroxysm lasted two or three hours each time, and recurred *if I repeated the dose, not otherwise*. I discontinued it, and was in good health." This was enough to set him to experimenting. Analysis was leading to synthesis. He now passed six years in noting the effects of different drugs and poisons upon healthy persons, and in studying old volumes of recorded experiments in *Materia Medica*. For others before him had tried the effects of medicine upon the healthy. His family were pressed into service, his friends also assisted him. Each medicine was tried in various doses, and in every possible variety of circumstances, that the real effect might be clearly understood. All the time he could steal from his translations he devoted to these provings and to chemical researches.

226. Give short sketch of Hahnemann's life at Stotteritz.

In 1791 poverty compelled him to go to the little village of Stotteritz, where he could live still more cheaply. While there he helped in the work of the house, wore the garments of the poor and the heavy wooden clogs of the poor German, and even kneaded the bread with his own hands. Sickness befell his family. He had lost faith in medicine. Of this time he writes: "Where shall I look for aid, sure aid? sighed the disconsolate father, on hearing the moaning of his dear, inexpressibly sick children. The darkness of the night and the dreariness of the desert all around

me; no prospect of relief for my oppressed paternal heart." Yet always he had in mind the determination to continue his experiments, to elaborate the new law that he had begun to make practicable.

227. Describe the treatment of Herr Klockingbring.

Previous to this time Hahnemann had no opportunity of testing upon the sick the result of the drug-proving upon the healthy. A certain influential man, one Herr Klockingbring, had by ridicule been rendered violently insane, and his wife, having heard somewhat of Hahnemann, was induced to request him to attend her husband.

Through her influence the Duke of Gotha gave up to Hahnemann for the experiment a wing in his old hunting castle at Georgenthal, at the foot of the Thuringian Mountains, nine miles from his own capital of Gotha. He caused it to be properly fitted up for the reception of the maniac, and his keepers. He was taken with the madness in the winter of 1791-92. It was probably in the spring of 1792 that Hahnemann's attention was first called to the case, and during that summer that he went to Georgenthal. It was a case of acute mania, and Klockingbring was very violent, requiring several keepers. Hahnemann says that for two weeks he watched him without giving him any medicine. It was the fashion then to treat insane persons with great severity, chaining, beating, and placing them in dark dungeons. Hahnemann did not approve of this, and treated his illustrious patient with great gentleness. It has been claimed that Hahnemann antedated the great alienist Pinel in this plan of treating the insane. In 1793, Klockingbring returned to Hanover completely cured.

228. Give an account of the epidemic of Scarlet Fever at Konigslutter.

During his last year at Konigslutter, 1799, an epidemic of

scarlet fever appeared, and Hahnemann put his new found knowledge to the proof. He declared that belladonna, inasmuch as it would produce a similar drug condition, would cure scarlet fever. And it did.

229. When and where was Hahnemann's first essay on Homœopathy published?

At Königsberg, in 1796, he published in the *Journal for Practicing Physicians*, edited by his good friend Hufeland, and which was the most important medical journal of that time, his celebrated essay on a New Principle for Ascertaining the Curative Powers of Drugs. In this he gave to the world for the first time his principle—*similia similibus curantur*—explaining how he had experimented, and the result. It was only after six years of constant trial and study that he shared the wonderful secret with the medical world.

230. Give the title and date of publication of first provings.

The first collection of provings on his family, etc., *Fragmenta de Viribus, medicamentorum positivis sive in sano corpore humanos observatis*. Leipzig: Barth, 1805, was published while he was at Torgau, in 1805.

231. When and where was the Organon first published?

Five years after the publication of the *Fragmenta de Viribus*, the first edition of the *Organon* appeared. (Dresden, Arnold, 1810.) In this he gave to the world a careful explanation of his new medical discoveries and beliefs. In this book may be found everything relating to the new medical method, and in it he for the first time gave it its present name of Homœopathy. Five editions were published. It has been translated into English, French, Italian, Spanish, Hungarian, Dutch, Polish, Russian, Danish and Swedish.

232. Describe his life in Leipsic from 1811 to 1820.

In the year 1811, he transferred his Lares and Penates to his old home—Leipsic—which place he had first entered an enthusiastic and scholarly lad of twenty. Trial, malevolence, privation, falsehood, all had followed him like furies. That Hahnemann ever planned any means of promulgating a new medical system for his own personal aggrandizement, as has by his enemies been asserted, any one in any way conversant with his life must utterly discredit. He was all through his life the victim of circumstances; or as we claim, of a wise Providence that fashioned every event, and from the seemingly tangled threads in his web of life wrought a perfect picture.

It now became impressed upon his mind that he must teach this doctrine of medicine in which was certainty, publicly to men; and so he went to Leipsic, and commenced to lecture at the University upon the principles of Homœopathy. In December, 1811, he inserted a notice of his medical institute in a journal of the city.

But before he was permitted to lecture, he was compelled to defend a thesis before the Faculty of Medicine. This he did on June 26, 1812. The title was "A Dissertation on the Helleborism of the Ancients," and it was such a marvel of erudition that no one dared to dispute it. In its pages containing quotations from the Hebrew, Latin, Greek, Arabic, Italian, French, English and German, there was evidence of profound knowledge; it seemed an echo from the great libraries of Hermanstadt and Dresden. After this he commenced lecturing on Wednesday and Saturday afternoon from 2 to 3 o'clock; the lectures were continued semi-annually during his entire stay at Leipsic. He soon attracted hearers from the medical and law students and the younger of the Leipsic physicians.

The fame of his learning, and a desire to see this man

who taught such medical heresies, attracted many to him. Soon from the audience he gathered a circle of young men, who commenced under his direction to make provings upon themselves. The result is the *Materia Medica Pura*. These faithful disciples lived near Hahnemann's house, and were almost constantly with him. Each had his duty to perform, and Hahnemann, after collecting the symptoms, verified them, subjecting them to the finest scrutiny, and with the most scrupulous exactitude analyzed them. The plants were collected, the preparations according to the formula of the Master were made, the results noted. Hahnemann's time was fully occupied with his lectures and receptions of his patients at his home; he did not visit them at their houses. Daily with his wife and daughters he took a walk in one of the public gardens of the city. After the day's labor, he was accustomed to sit among his students in the evening, and with a mug of ghose by his side and the long German pipe in his hand, he would tell his disciples of the curious actions and ways of the older physicians at the sick bed, or relate circumstances in his former life, and then he would become lost to his surroundings, and his pipe would go out, when one of his daughters would be at once called to relight it.

But persecution came. The students of Hahnemann were in the habit of prescribing for patients at this time, and Hahnemann's reception was thronged daily. Both master and student gave medicine. This was against the law of that time, and the apothecary whose privileges were supposed to be encroached upon, appealed to the courts against Hahnemann, and he was cited to appear. He did so, and also addressed a letter to the authorities, in which he argued the question of his self-dispensing at length, saying that he did not give compound prescriptions, but only simple remedies in such minute doses, and of whose preparation the apothecaries knew nothing, that they could

not put up these medicines, and their exclusive title was only to make compound prescriptions, that Homœopathy did not compound nor dispense.

He was soon notified that he would be fined twenty thalers for every dispensation afterwards. Now it seemed that the old man must be driven forth, or relinquish his practice. But in 1820, a very celebrated general, Prince von Schwartzberg, who had been a leader in the allied armies against Napoleon, applied to Hahnemann for treatment, asking him to go to him at Vienna. Hahnemann replied that if he wished his services, he must come to Leipsic, as he was too busy to go to Vienna. So desirous was Prince Schwartzberg to consult Hahnemann, that he came to Leipsic, and established himself in the suburbs of the city. His case was incurable, and he died about six months afterwards of a stroke of apoplexy. His death was the cause of more vilification of Hahnemann, and the legal persecutions that during the treatment had been prevented by the Saxon government on account of the illustrious patient, were resumed with redoubled vigor. Hahnemann's students were arrested, fined, and even imprisoned. Hahnemann himself was persecuted, until it seemed that he must either give up practice, or resume his wanderings.

233. From Leipsic where did he go ?

Not far from Leipsic there was situated one of the little principalities of which Germany at that time was composed. It was the Duchy of Anhalt Coethen. The Grand Duke Frederick had heard of Hahnemann's wonderful cures, and besides was a lover of justice. So he offered an asylum to the old physician, appointed him his privy physician with the title of Hofrath, and by edict gave him permission to dispense and prescribe within the limits of his kingdom. Early in May Hahnemann shook the dust of inhospitable

Leipsic from his feet, and with his faithful students accompanying him on the road, set out for Coethen.

234. Tell something about his life at Coethen.

Coethen was a delightful place nestled in the valley of a small river, and in its quiet the master passed 15 years of his important life. In a summer-house at the end of a paved garden he studied and wrote and meditated, formulating, completing, and perfecting his life work—while the growls of the medical wiseacres only reached him as so much harmless thunder. The Chronic Diseases were written at Coethen, the last four editions of the Organon, and the last two editions of the *Materia Medica Pura*.

235. Give a description of the 50th anniversary of his graduation at Erlangen.

The year 1829 was memorable, because on August 10th he celebrated the 50th anniversary of his graduation at Erlangen. His disciples came to him bringing gifts. The old savant's portrait was done in oil, and his bust was modeled; Stapf, the favorite pupil, had collected the fugitive essays he had written, and brought the first copy from the printer as his token; Albrecht, the Dresden friend and after-time biographer, delivered a poem in his praise; Rummel presented the honorary diploma from his alma mater; the scholarly Muhlenbein made a Latin oration, giving a sketch of his life and labors, and the good duke and duchess remembered their beloved physician. Afterwards there was a grand dinner. The disciples came from all parts of the country; those who could not come sent letters of amity.

236. Describe the death of the wife of Hahnemann.

Soon after the anniversary a great sorrow came, and the wings of ashen grey were unfolded over the good housewife. For years his wife had devoted herself to the cares of life, so that her husband might be free to pursue his study.

At the time of her illness Hahnemann was also ill, but he dragged himself to her bedside to comfort her. She died March 31, 1830. After her death the daughters continued to care for the household; there was but little change.

237. In what year was the Homœopathic Hospital opened in Leipsic ?

In January, 1833, a homœopathic hospital was formally opened at Leipsic. He visited it later on, and had the satisfaction of knowing that there was an institution pledged to a fair trial of homœopathy.

238. Give the circumstances of his second marriage.

In 1835, this old man, who had thought that according to the laws of nature he might finish his pilgrimage at any time, renewed his lease on life. He married a French lady of 35 years of age, one Marie Melanie d'Hervilly Gohier, the daughter of a French painter, who had been adopted by a prominent Frenchman. She had heard of Hahnemann, and visiting him they were mutually attracted. He made a will giving his children the most of his property, and on the 28th of January, 1835, the marriage occurred.

239. When did Hahnemann remove to Paris ?

On the first of Whitsuntide of the same year (1835) he with his wife departed for Paris.

240. Tell something about Hahnemann's life in Paris.

Hahnemann and his wife lived in good style in a fashionable part of the city. Soon Hahnemann, though it was supposed that he intended to rest from his labors at Paris, was engaged in a larger and more lucrative practice than ever he had had. Contrary to the old custom, he now made visits, driving about in his carriage after the manner of city physicians. His clientage constantly increased, and although he gave away most of his property

on leaving Germany, it is estimated that during the eight years of his life in Paris he earned more than 4,000,000 francs.

The French Homœopathic Society honored him, making him their Honorary President. Every birthday was made an excuse for a fete in his honor; many distinguished strangers called upon him as the founder of a new and successful school of medicine. His home life was also very happy; he went to opera and to receptions. But he did no more literary work.

241. Describe his last illness and death.

For many years Hahnemann had suffered every spring from bronchial catarrh, but had always completely recovered, so that the customary return of the malady in the middle of April, 1843, had no special significance. But it was his last illness: he grew weaker and weaker, and he suffered greatly with paroxysms of suffocating. He died at 5 o'clock, Sunday, July 2d, 1843, at his home in the Rue de Milan. The body was embalmed by Ganai.

His illness commenced with a bilious diarrhoea, succeeded by an intermittent fever. It first assumed a tertian, then a quotidian form; he rallied surprisingly, and was thought convalescent, when bronchitis senilis set in and he lived but three days. He retained his faculties to the last, and shortly before he expired dictated a simple epitaph—*Non inutilis vixi*.

He was buried at six o'clock on the rainy morning of July 11, in the Cemetery of Montmartre. But a few people followed his remains to the tomb. In 1898 his body was exhumed and was transferred to the Cemetery of Pere la Chaise, where it is the design that a monument be erected in his honor.

(See Bradford's Life of Hahnemann. Phila.: Boericke & Tafel. 1894.)

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